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ABSTRACT

The first phase of this Special Vocational Teacher Education Project studied methods of updating the vocational and applied arts education program at Wayne State University. This included the classification of goals for divisional offerings, assistance in establishing divisional policies, and the development of a model for an undergraduate vocational teacher education program for transfer students from community colleges. The divisions referred to include the former departments of Industrial Education, Business Education, and Family Life Education at Wayne State University. Phases II and III were concerned with developing curriculum materials for industrial teacher education, developing trade competency examinations, and planning for the professional development of the staff. This final report describes what took place, what materials were developed, and the applications and response from the Industrial Education Curriculum Area. (GEB)

ED054348

Implementation of Selected Missions Vocational & Applied Arts Education

Wayne State University
Industrial Education

G. Harold Silvius
Study Director

J. Kenneth Cerny
Associate Director

VT013463

June, 1971

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IMPLEMENTATION OF SELECTED MISSIONS

VOCATIONAL AND APPLIED ARTS EDUCATION PROGRAM

Final Report for a 1970-71 Special Vocational Research Project
in Industrial Education at Wayne State University
That Was Approved and Funded Through the
Division of Vocational Education
Department of Education
State of Michigan

VOCATIONAL AND APPLIED ARTS EDUCATION

WAYNE STATE UNIVERSITY

JUNE, 1971

G. Harold Silvius
Study Director

J. Kenneth Cerny
Associate Director

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PREFACE

During the spring of 1970 academic year, the staff of the Department of Industrial Education, Wayne State University, felt a need to conduct a study that would be concerned with "The Status and Projection" of its educational enterprize. Based on this determination, such a proposal was prepared and submitted for funding, as a 1970-71 Special Vocational Teacher Education Project, Division of Vocational Education, Department of Education, State of Michigan. The three major goals for the proposed study are described as Phases I, II, III of the original proposal that appears as Exhibit A of the APPENDIX of this report, beginning on p.111. It will be noted that Goal I was to generate data that would be used as a basis for the projection and the development of offerings in Industrial Education during the first half of the seventh decade of this century. This status and projection study of the industrial education offerings at WSU was approved by the Division of Vocational Education, Department of Education. After the inception and subsequent approval of the study by the State of Michigan, there were many internal and external forces which immeasurably altered the original thrust of the study as envisioned in the early months of 1970. These developments resulted in a new organizational plan in January, 1971 for vocational and applied arts education at WSU (described in reprint of MIES Journal article on p.3A of this report).

The new organization unit for Vocational and Applied Arts Education brought together the former Departments of Business and Distributive Education, Family Life Education, and Industrial Education. This new organizational structure for Industrial Education, within the unit for Vocational and Applied Arts Education, necessitated the need for a complete reorientation of the objectives that had been presented and approved as Phase I of the original proposal for a special vocational teacher education project. The petition describing proposed changes for the objectives Phase I, and the approval for a revised study by the staff of the Vocational Division, State of Michigan, are shown as Exhibits B and C of the APPENDIX of this report, beginning on p.111. The major thrust of the revision of Phase I was directed at an "Implementation of Selected Missions for Vocational and Applied Arts Education at Wayne State University".

Phase II of the study (as described as in Exhibit A of the APPENDIX) remained as originally stated: 1) the accelerated development and refinement of curriculum materials for industrial teacher education; 2) the development and refinement of the trade competency examinations in the trade and technical options as offered under the proposed new program.

Phase III remained as before, dealing with the professional development of the staff through their participation in carefully selected meetings, conventions, seminars, and institutes focused on evolving developments of a comprehensive program of vocational

and applied arts education, especially as these sessions related to vocational teacher education.

The format of this report encompasses the Vocational and Applied Arts Education Missions with application and response from the Industrial Education Curriculum Area. Each response is supported by supplementary materials which include a reprint from the MIES Journal, a special issue of the Guild News (a publication of the Industrial Education Guild) describing tapes of presentations made by national leaders, and special curriculum materials that have been developed in connection with this vocational education project to facilitate instruction in vocational teacher education at WSU.

G. Harold Silvius

G. Harold Silvius
Study Director
June, 1971

J. Kenneth Cerny

J. Kenneth Cerny
Associate Director
June, 1971

A Program of Vocational and Applied A
Established by Wayne State University

By DR. G. HAROLD SILVIUS

For the past several months, Wayne State University faculty in Business and Distributive, Family Life, and Industrial Education have been working with their colleagues throughout the University, and with the deans of their College in formulating plans for a new program of Vocational and Applied Arts Education. The organizational plan for the new program may serve as a model for the organization of other major units or divisions within the College of Education. It is anticipated, for example, that the organizational model for the new program will make it possible for the full- and part-time staff to work in full partnership with selected colleagues in educational psychology, instructional technology, educational history and philosophy, education sociology, and other areas in dealing rapidly and functionally with the critical issues facing American education, especially occupational education in urban schools. To illustrate, the College of Education has made a commitment that will make it possible for designated staff from an area like educational psychology to be officially seated on the Administrative Committee of the new unit for a needed period of time. For example, this might be while the performance outcomes are being identified and specified (and later evaluated) for that block of undergraduate education within the new unit that will be directed at developing teacher competencies which relate to the theory, organization, planning, and maintaining instruction for vocational and applied arts education.

The Functions of the Administrative Committee

Early in the planning for the new program, it was decided that the model was not to be just a federation of the three major departments; to deal with principle, the full-time faculty in each of the former departments were asked to elect a coordinator for their established and ongoing curricula (or various programs), who in turn would serve on the Administrative Committee of the new unit working closely with the director to

(1). advise the director on such matters as budgets, scheduling, staff loads, and publications; this individual would represent all of the undergraduate and graduate programs within his area of concentration (e.g. industrial, family life, or business and distributive education).

(2). help give direction to all short- and long-term plans.

(3). help implement the management decisions.

(4). help identify other vocational or applied arts areas that need to be expanded and developed to the degree where such a curriculum area might have its coordinator seated on the Administrative Committee. An example might well be expanded teacher education programs in health and medical care.

(5). help establish and maintain a Collaborating Advisory Committee involving students and lay people.

[1]With the establishment of the new program at WSU, Dr. Silvius is now professor of Industrial Education. When the new program of Vocational and Applied Arts Education became a reality, he requested that he be granted the privilege of returning to a major professorship within the new unit for the remaining years of his professional career. It was his privilege to have served for thirty years as professor and chairman of the former Department of Industrial Education at WSU.

The new unit director is responsible for budget, scheduling, course offerings, staff, curriculum development, evaluation, and student teaching. The director is charged, also, with maintaining liaison with college and university administration, the community, and state and national groups. He has, of course, an equal voice as a member of the Administrative Committee of the new unit with the right to make decisions as a program administrator that are in keeping with policies and practices of the College and University.

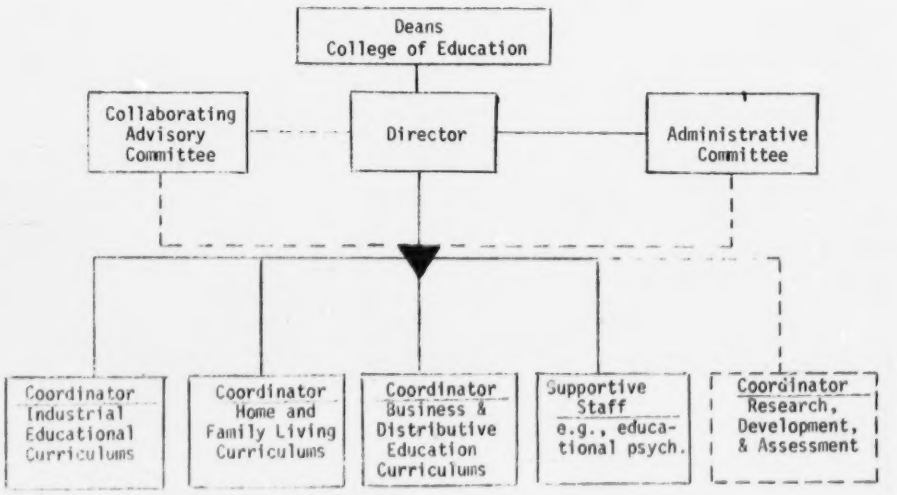

Fig. 1 The Organizational Structure for the new unit of Vocational and Applied Arts Education at Wayne State University.

Provision for Research and Development

It is now envisioned that an early objective of the new program will be to expand greatly the ongoing provisions for research, development, and assessment in vocational and applied arts education. This would embrace what is needed in the state to expand and evaluate the program in the schools, and in teacher education. It is anticipated that a close working relationship can be established between the State Department of Education and WSU's new program in the projection and assessment of vocational technical education, especially as it relates to urban schools in the six counties that comprise the metropolitan areas.

New Program Now Official

On January 19, 1971, Dean J. W. Menge, College of Education, announced to the entire college faculty that the proposed new program had been officially approved. Dean Menge also announced the appointment of Dr. Fred S. Cook as director of the new unit. Since then the faculties of the former departments have elected the following persons to serve three-year terms on the Administrative Committee, as coordinators of the offerings in

Business and Distributive Education—
Dr. Frank W. Lanham
Family Life Education—Prof. Bette LaChapelle
Industrial Education—Dr. Willard M. Bateson

FULL-TIME PROFESSIONAL STAFF IN NEW UNIT OF VOCATIONAL AND APPLIED ARTS EDUCATION AT WAYNE STATE UNIVERSITY. Administrative Committee (seated, l to r): Frank W. Lanham, Albert F. Stahl, Bette LaChapelle, Fred S. Cook (Director), and Willard M. Bateson. (Standing, l to r): G. Harold Silvius, Gerald B. Baysinger, James R. Dearing, Kathleen M. Herschelmann, Karen Clein, William A. Hulle, Marian McMillan, and J. Kenneth Cerny.

Systems Approach to be Utilized

Each teacher education curriculum or program within the program will be subjected to practices that provide for systems design, analysis, management, and evaluation; this approach can provide for the preparation of teachers, supervisors, administrators, and other leaders who will have a strong commitment to the development and maintenance of needed programs in vocational and applied arts education. The model calls for having the results of each program and/or course stated behaviorally, and in a form that can be evaluated later. It is believed that the systems approach will provide a means for controlling the inputs and outcomes of the various ongoing programs, as well as those to be developed, within the new unit. This educational process, with continuous feedback, is illustrated in Figure 2. The staff is committed to "practice what they preach." It is their goal to have WSU students fully understand, appreciate, and become committed to an innovative, creative, experimental approach as it is employed in the preparation and upgrading of teachers, supervisors, and other leaders for vocational and applied arts education. It is their goal to do this as they continuously subject the outcomes to assessment and evaluation.

Mission of the New Unit

Eight points have been identified as the mission of the new program of Vocational and Applied Arts Education:

(1). Develop a system for the preparation of teachers, supervisors, and administrators for vocational and applied arts education.

(2). Develop and continuously redesign preservice teacher education programs to prepare personnel for vocational and applied arts education.

(3). Develop and evaluate effective inservice teacher education programs to update technical and professional teaching competency.

(4). Prepare needed teachers, supervisors, and administrators for vocational and applied arts education.

(5). Devise processes and procedures to develop and evaluate new curriculum materials.

(6). Collect and evaluate the input, process, and output of the system for personnel and curriculum development.

(7). Promote and conduct research essential to the improvement of vocational and applied arts programs.

(8). Provide services to other programs of the College of Education, the University at large, and other agencies.

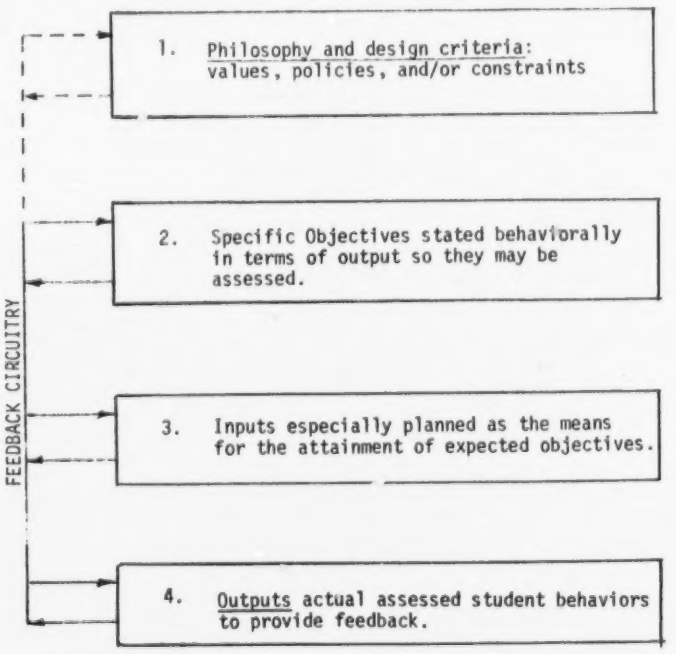
1. Philosophy and design criteria: values, policies, and/or constraints
2. Specific Objectives stated behaviorally in terms of output so they may be assessed.
3. Inputs especially planned as the means for the attainment of expected objectives.
4. Outputs actual assessed student behaviors to provide feedback.
FEEDBACK CIRCUITRY

Fig. 2–Schematic of System Model for the new units of Vocational and Applied Arts Education at Wayne State University.

PHASE I

MISSION:

TO DEVELOP A SYSTEM FOR THE PREPARATION OF TEACHING AND SUPERVISORY PERSONNEL IN THE FIELD OF VOCATIONAL AND APPLIED ARTS EDUCATION

RESPONSE:

UPDATING THE INDUSTRIAL EDUCATION PROGRAM

The Industrial Education staff, recognizing that the need for a fresh approach to the preparation of teachers in the field of Vocational and Applied Arts Education, revised their entire program. The new approach to the Industrial Education program lends itself to computerization, allows a student to enter the instructional cycle during any quarter, and permits the community college transfer student to complete the requirements in the industrial-arts major in one or two years.

The new program also facilitates the concept of differentiated staffing, with demonstrations by a key staff member for all who are taking the course at each level. The plan is to have the laboratory for a particular quarter organized for classes in a specific series and utilized on an "open" laboratory basis. Demonstrations by the key staff member for each course level would be planned and noted in the Schedule of Classes. The laboratory, under the direction of a qualified laboratory assistant, would be "open" for the necessary needed hours plus a margin for flexibility. The advantages of differentiated staffing in this case are numerous. The cancellation of the classes due to low enrollments would be minimized. And the student and the staff could more intelligently develop a student plan of work extending over the two-three- or four-year period. The former Department of Industrial Education provided four major options and concentration for those majoring

in industrial arts. Under the proposed program there is to be two major options in industrial education: 1) the major in industrial arts, and 2) the major in industrial vocational education. The industrial arts option requirements would be met through the completion of a minimum of 52 quarter hours directed into four major areas: namely, materials and processes of industry; power and mechanical systems of industry; electrical and electronics; and drafting. The industrial-vocational option is met through the satisfactory completion of a trade competency examination. The enclosed copy for the 1970-71 College of Education Bulletin describe provisions for the projected offering for a major in industrial arts or industrial vocational education.

INDUSTRIAL EDUCATION

Advisers: Bateson, Baysinger, Hulle, Sechrest, Silvius.

Undergraduate programs leading to the baccalaureate degree and the Michigan Teaching Certificate (including vocational endorsement for certain vocational options) are offered under the advisement of the industrial-education staff. The industrial-arts program prepares students to teach industrial arts at the junior and senior high schools. To teach vocational education in secondary schools, community colleges, and schools sponsored by industry, student pursue one of the vocational education options. The Master of Education, the Master of Arts in Teaching degrees, the Education Specialist certificate, the Doctor of Education and the Doctor of Philosophy degrees, with a major in Industrial Education are also offered.

Courses that have been grouped with VAE x17x numbers are laboratory courses designed to prepare and upgrade industrial-arts teachers in technical competence. The VAE x16x numbers are vocational options that may be completed by competency examination. Those designed with VAE x18x numbers (as well as x19x listed under the Divisional designation) are professional education courses for industrial education majors.

Minimum Requirements for Undergraduate Programs

All students are required to complete, in addition to the degree and certification requirements specified by the College, the requirements listed below.

General Education: Minimum 60 quarter hours:

As a rule, course work in general education should be distributed as follows:

	credits		credits
English and Speech.	12-16	Social Science.	16
Natural Science.	16	Physical & Health Education.	6
		Electives (depending on minor and major) . . .	10-51

Certification Minor:

A unit minor of thirty credits (or thirty-six for a group minor) is needed to meet the requirements for a secondary provisional teaching certificate. Students pursuing one of the vocational options may elect a minor in industrial arts. The minor should be planned with the assistance of an adviser.

Industrial-Arts Major: 59-62 credit hours:

The teaching major in industrial arts is satisfied by completing the following courses. Appropriate substitutions may be made when deemed equivalent by a curriculum committee.

MES 0191	Welding and High Temperature Processes (4)
MES 0291	Machine Tool Operations (4)
VAE 1171	Materials and Processes - Wood (4)
VAE 1173	Elementary Mechanisms (4)
VAE 1174	Drafting (4)
VAE 1175	Electrical Fundamentals (4)
VAE 2171	Materials and Processes - Sheet Metarials (4)
VAE 2173	Theory and Application of Power and Mechanical Systems I (4)
VAE 2174	Production Tool Layout (4)
VAE 2175	Electrical and Electronic Fundamentals I (4)
VAE 3171	Materials and Processes - Multi Media (4)
VAE 3173	Theory and Application of Power and Mechanical Systems II (4)
VAE 3174	Processing and Plant Layout (4)
VAE 3175	Electrical and Electronic Fundamentals II (4)
VAE 4176	Senior Project (3-6)

Vocational Major: 45-54 credit hours:

Students planning to teach one of the vocational options on the high school or community college level must satisfactorily complete an examination as evidence of competency in the vocational option. The level of competency expected assumes wage-earning experience in the occupation related to the vocational option.

A total of 45 credit hours, which satisfies the degree and certification requirements in the teaching major, may be granted for satisfactory performance on the competency examination. Hours of credit earned by means other than by the competency examination must be validated by examination before the requirements in the teaching major are satisfied.

Professional Education: Undergraduate - 40 hours:

ED 3015	Education and Intergroup Problems in Urban Society. (4)
EDP 3731	Introduction to Child Study (4)
EHP 3601	Introduction to Philosophy of Education. (4)
VAE 2181	Survey of Industrial Education (4)
VAE 4192	Teaching Internship. Cr. 8-16 (Max. 16).
VAE 5187	Methods and Materials of Instruction I. (4)
VAE 6187	Methods and Materials of Instruction II. (4)

Industrial Education Courses:

Credit in the following occupational options (x16x entries) may be earned through competency examination:

VAE 1160 Aircraft and Engine Mechanic* (1-45 - Max. 45)
VAE 1161 Auto-Body Designer* (1-45 - Max. 45)
VAE 1163 Automobile Body Repairman* (1-45 - Max. 45)
VAE 1164 Automobile Mechanic* (1-45 - Max. 45)
VAE 1165 Cabinetmaker (1-45 - Max. 45)
VAE 1166 Carpenter (1-45 - Max. 45)
VAE 1168 Die Designer* (1-45 - Max 45)
VAE 2160 Die Maker* (1-45 - Max. 45)
VAE 2161 Electrician (1-45 - Max. 45)
VAE 2163 Electronics Mechanic* (1-45 - Max. 45)
VAE 2164 Model Maker* (1-45 - Max. 45)
VAE 2165 Pipe Fitter* (1-45 - Max. 45)
VAE 2166 Printer* (1-45 - Max. 45)
VAE 2168 Refrigeration Mechanic (1-45 - Max 45)
VAE 3160 Sheetmetal Worker (1-45 - Max. 45)
VAE 3161 Television Service and Repairman (1-45 - Max. 45)
VAE 3163 Tool Designer* (1-45 - Max. 45)
VAE 3164 Toolmaker* (1-45 - Max. 45)
VAE 3165 Welder, Combination* (1-45 - Max. 45)
VAE 4160 Occupational Specialization (1-45 - Max. 45)

A. Commercial Foods*
B. Health Occupations*
C. Cosmatology*

* Examinations Available Currently

<u>Laboratory and Field Experience Courses for Minor and/or Major in Industrial Arts and/or Options in Vocational Education</u>

VAE 1171 Materials and Processes-Wood. Cr. 4. Development of products suitable for industrial-arts programs involving hand and machine operations, forming, fastening, and finishing.

VAE 1173 Elementary Mechanisms. Cr. 4. Principles involved in conversion, transmission, and utilization of mechanical energy, and their application in industrial products.

VAE 1174 Drafting. Cr. 4. Orthographic projection and surface development, lettering, dimensioning, symbols, and notation. Detailing from production equipment designs for Industrial-Arts programs. Prereq: high school drafting or equivalent.

VAE 1175 Electrical Fundamentals. Cr. 4. Principles of electricity related to direct and alternating current. Sources, distribution systems, applications and testing. Emphasis on diagnosis of malfunction, correction and testing of single electrical products suitable for inclusion in industrial-arts programs.

VAE 2170 Cooperative Work Study. Cr. 2-18 (Max. 18). Prereq: consent of adviser. Supervised work experiences for developing occupational competency essential for teaching technical and trade subjects.

VAE 2171 Materials and Processes-Sheet Materials. Cr. 4. Prereq: VAE 1171. Development of products suitable for industrial-arts programs involving laying out, cutting, forming, joining, and finishing of various sheet materials.

VAE 2173 Theory and Application of Power and Mechanical Systems I. Cr. 4. Prereq: VAE 1173. Servicing industrial products equipped with power systems other than electrical. Theory and application of hydraulic, pneumatic, thermal, and chemical power. Emphasis on diagnostic techniques and testing.

VAE 2174 Production Tool Layout. Cr. 4. Prereq: VAE 1174. Production equipment design for Industrial-Arts Programs. Application of materials (wood, plastic, metal) and manufacturing processes (bench, machines, weldings, heat treat, material finishes).

VAE 2175 Electrical and Electronic Fundamentals I. Cr. 4. Prereq: VAE 1175. Principles of electricity and electronic applied to operation, maintenance, installation, and repair of industrial products suitable to use in industrial-arts programs. Emphasis on diagnosis of malfunction, correction, and testing final results in servicing and maintenance of electrical and electronic products.

VAE 3170 Cooperative Work Study. Cr. 2-18 (Max. 18). Prereq: consent of adviser. Continuation of VAE 2170.

VAE 3171 Materials and Processes-Multi Media. Cr. 4. Prereq: VAE 2171. Development of products suitable for industrial-arts programs involving lay-out, cutting, forming, assembling, and finishing of materials appropriate for school laboratories.

VAE 3173 Theory and Application of Power and Mechanical Systems II. Cr. 4. Prereq: VAE 2173. Continuation of VAE 2173 experiences but with more complex industrial products. Emphasis on diagnosis of malfunction, repair or replacement of components and final check-out of corrections to industrial products suitable for use in industrial-arts programs.

VAE 3174 Processing and Plant Layout. Cr. 4. Prereq: VAE 2174. Process analysis (operations, methods, equipment, and costs), plant layout, and product design for industrial-arts laboratories.

VAE 3175 Electrical and Electronic Fundamentals II. Cr. 4. Prereq: VAE 2175. Continuation of VAE 2175 but with more complex circuitry design. Emphasis on diagnosis, correction, and testing of electrical and electronic products and components suitable for inclusion in industrial-arts programs.

VAE 4170 Cooperative Work Study. Cr. 2-18 (Max. 18) Prereq: consent of adviser. Continuation of VAE 3170.

VAE 4176 Senior Project - Industrial-Arts Majors. Cr. 3-6. Prereq: VAE 3171 and 3174. Cost estimating, processing, design of production tools, layout of line to manufacture product suitable for school laboratories.

VAE 5170 Experiences for Technical Development. Cr. 2-12 (Max. 12) Prereq: consent of adviser. For extending technical competence in the major teaching field. Attendance at industrial service schools, WSU Applied Management and Technology Center, or other appropriate field experience.

VAE 5171 Advanced Manufacturing Processes. Cr. 2-18 (Max. 18) Prereq: VAE 3171 or equivalent. Advanced hand and machine techniques in the manufacture of products suitable for industrial-arts programs.

VAE 5173 Power and Mechanical Systems. Cr. 2-18 (Max. 18) Prereq: VAE 3173 or equivalent. Intensive study of a specific aspect of power and mechanical systems as related to the service of industrial products. Emphasis on diagnosis, correction, and final inspection of a product suitable to be included in an industrial-arts program.

VAE 5174 Planning for Production in School Laboratories. Cr. 2-18 (Max. 18). Prereq: VAE 3174 or equivalent. Development of comprehensive plans for the manufacturing of a suitable product in school laboratories. Plans embrace development of prototype, cost analysis, processing, layout and design of tools, jigs, fixtures and plant for producing the product.

VAE 5175 Advance Electrical and Electronic Systems. Cr. 2-18 (Max. 18). Prereq: VAE 3175 or equivalent. Intensive study of systems found in servicing and design of industrial products suitable for inclusion in industrial-arts programs.

VAE 5176 Project Design and Development. Cr. 4. Prereq: VAE 3171, 3173, 3174, 3175. Emphasis on developing renderings, models, and prototypes of products suitable for industrial-arts programs.

VAE 6170 Experiences for Technical Development. Cr. 2-12 (Max. 12) Prereq: consent of adviser. Refer to 'AE 5170.

VAE 6176 Project Design and Development. Cr. 4. Field trips to selected industries to study the industrial functions of research, development, planning for production, unit and mass producing of an industrial product; service of industrial products.

Professional Education Courses - Undergraduate and Graduate Majors

*VAE 2181 Survey of Industrial Education. Cr. 4. Aims, organization and programs of industrial education in schools and colleges; vocational and practical arts education in the United States; requirements for teacher education; professional association; and development of profession.

*VAE 5181 Introduction to Industrial Education. Cr. 4. No credit after IED 2181. Objectives and content of industrial-arts and vocational-industrial education programs. Teacher preparation; local, state, and federal relationships in administration and between various agencies and organizations.

*VAE 5187 Methods and Materials of Instruction I. Cr. 4. Practices and techniques for (1) organizing needed teaching plans and aids for a specific teaching situation, (2) securing needed data regarding students, (3) organizing a class, (4) developing essential records, and (5) establishing a safety program.

*VAE 6184 Planning and Management of School Laboratories. Cr. 4. Architectural details, layout principles; visual, auditory and atmospheric control and comfort; circuitry. Procurement, material handling, budgets and accounts, maintenance of equipment and laboratories.

*VAE 6187 Methods and Materials of Instruction II. Cr. 4. Practices and techniques for (1) teaching units in industrial education with group and individualized methods; (2) locating, selecting, and using educational materials.

*VAE 7185 Evaluation in Industrial Education. Cr. 4. Development and administration of teacher made tests for measuring educational achievement. Paper and pencil, object, manipulative performance, and published tests. Test evaluation and improvement through item analysis.

*VAE 8185 Curriculum Development Procedures. Cr. 4. Prereq: VAE 6185 and consent of adviser and instructor. Instruction and experience for advanced graduate students acquiring competence and insights needed for giving leadership to development of curriculum material for vocational and practical-arts education.

*VAE 8187 Seminar in Industrial Education. Cr. 4-8 (Max. 8). Prereq: consent of adviser. Leadership training in recognizing, selecting, and studying current issues in industrial education. Scholarly papers and releated resource materials developed and discussed.

Additional courses for majors in industrial education are listed under VAE x19x elsewhere in the catalog.

*For vocational certification when taught or directed by an approved vocational teacher educator.

MISSION:

DEVELOP A SYSTEM FOR THE PREPARATION OF TEACHING AND SUPERVISORY PERSONNEL IN THE FIELD OF VOCATIONAL AND APPLIED ARTS EDUCATION

RESPONSE:

HAVEN HILL RETREAT

In an attempt to implement the first mission of the new department, the preparation of teaching and supervisory personnel in the field of Vocational and Applied Arts Education, a retreat was held at the Haven Hill Lodge, Milford, Michigan.

Individual staff members of the Industrial Education Curriculum Area served in positions of leadership during the Haven Hill Retreat. Specific committee reports, the results of the retreat, were presented according to a specified format for the committee report. Each of the committee reports, where industrial education staff served, are included in this section of this project report.

Committee on Admissions Policies and Procedures
members participating:

Dr. Willard M. Bateson
Mr. J. Kenneth Cerny

Committee on Counseling-Plan of Work
members participating:

Mr. William A. Hulle
Dr. G. Harold Silvius

Committee on Policies and Procedures for Field Experiences
members participating:

Mr. Gerald B. Baysinger

Committee on Priorities and Load Assignment
members participating:

Dr. Willard M. Bateson
Mr. William A. Hulle
Dr. G. Harold Silvius

Committee on Team Planning and Responsibility
members participating:

Mr. J. Kenneth Cerny

Committee on Plans for Formulation and Coordination of Performance Goals
members participating:

Mr. William A. Hulle
Dr. G. Harold Silvius

W A Y N E S T A T E U N I V E R S I T Y

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE: Admissions Policies and Procedures Committee "A"

STAFF MEMBERS: Willard Bateson, Kenneth Cerny, Fred Cook, and Frank Lanham

STATEMENT OF PURPOSE:

The total staff of the Division developed a list of ideas to be explored by the committee. Agenda items charged to the committee were as follows:

1. What programs are to be maintained at the curriculum level?

2. What about post-degree programs?

3. Will persons be admitted to the Division or the curriculum area?

A total staff brainstorming session expanded the thrust of the committee to include recommendations for "Policies and Procedures Affecting Admission to Vocational and Applied Arts Education".

All recommendations of this committee are based on the fact that admissions to various curriculum areas are through the Division of Vocational and Applied Arts Education.

SPECIFIC RECOMMENDATIONS:

I. Criterion for Admission

A. The Division supports the concept of open door[1] admission, but recognizes the constraints of the university and college.

B. Proficiency examination will be required to determine where the student starts in the proposed system.

C. A standardized examination in oral and written skills will be invoked as a part of the initial precertification admission procedure. Continuing assessment of oral and written communication is a Division-wide policy. It is recommended that current university provisions be used to meet this requirement of the Division.

D. Students interested in a vocational option in Industrial Education may be admitted only in those areas where a trade competency examination is available.

E. Admission to any level within the Division is subject to potential enrollment limitations and availability of budget, staff and facilities.

F. The University policies of post-degree certification will be adhered to.

II. Time of Admission

A. Admission into curriculum areas of the Division will be twice yearly (fall and summer).

Fall	Winter	Spring	Summer
Accept admissions. First come, first admitted. After quota is filled, application may be placed on alternate list based on dated application.	No Admission	No Admission	Accept admissions. First come, first admitted. After quota is filled, application may be placed on alternate list based on dated application.

B. A Divisional Admission Committee should be established immediately. Effective July 1, 1971 all recommendations for admission must be reviewed and approved by the Division Admission Committee.

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[1]The Division supports the concept of open door admission with all its implications and would like to implement it to the extent that University and college restrictions permit.

III. Timeline and Processes

A. Current admission policies for all curriculum areas and all levels will be reviewed by December, 1971, with final action taken not later than July, 1972. The levels of admission differs by curriculum areas as follows:

1. Family Life Education and Industrial Education will admit at either the sophomore or freshman level as well as junior and senior levels. Those admitted at the either sophomore or freshman levels must subsequently apply to the senior division.

2. Business and Distributive Education will admit only at senior division level.

W A Y N E S T A T E U N I V E R S I T Y

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE: Counseling[1] - Plan of Work

STAFF MEMBERS: Kathleen M. Herschelmann, William A. Hulle, Marian McMillan, Frank D. Palmieri, and G. Harold Silvius

STATEMENT OF PURPOSE:

This report is concerned with counseling procedures and factors to be considered as students become committed to a program within the Division and follow through with a Plan of Work. Staff effort with this service help a student:

1. Investigate program and certification requirements in vocational and applied arts education.
2. Select or reject a curriculum.
3. Establish performance goals and time lines.
4. Assess education and work experience.

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[1] Counseling is defined as those staff efforts that aid a student in investigating, planning, and facilitating a Plan of Work.

5. Develop a computerized Plan of Work with an agreed upon schedule for completing the program.

6. Provide guidance that may be needed from quarter to quarter to adjust the student's schedule to complete the Plan of Work.

SPECIFIC RECOMMENDATIONS:

1. An early introductory professional experience should provide student orientation to the respective Division programs.

2. Staff members serving as advisers should operate the computer terminal to enter, to retrieve, and to update student records.

3. Computerized Plans of Work need to be developed for all persons admitted to the Division and who are expected to be active during Winter Quarter, 1972.

4. Computer programs for the Plans of Work identified in Recommendation 3, to be implemented by the suggested team of Kathleen Herschelmann, Gary Smith, and Mark Lavetter, in cooperation with representatives from Curriculum areas, on or before August 31, 1971.

5. During Fall Quarter 1971-72 there needs to be adequate Division staff time allocated for the development of individual Plans of Work for all active students as suggested in Recommendation 3.

6. Mediated self-instruction should be provided for student orientation in each major curriculum area for persons who are about to have their on-going or projected Plan of Work developed and placed in computer storage.

7. The Director, in consultation with Curriculum Coordinators, shall designate a tenured faculty member to coordinate all counseling procedures and records of essential statistical data.

WAYNE STATE UNIVERSITY

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas:
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE: Policies and Procedures for Field Experiences

STAFF MEMBERS: Bette LaChapelle, Chairman. Gerald Baysinger, James Dearring and Tommie Johnson

STATEMENT OF PURPOSE:

The specific purpose of this committee was to explore and discuss the guidelines and procedures for the field experiences related to the pre-service development of a student enrolled in the Division of Vocational and Applied Arts Education. It was also the responsibility of this committee to make recommendations regarding these same guidelines and procedures for implementation no later than Fall quarter, 1972 (September, 1972).

SPECIFIC RECOMMENDATIONS:

The following information is presented as guidelines, procedures, and policies to be followed in the intern teaching experience.

I. Selection and Preparation of the College Supervisor

A. Criteria for selection

1. Is a full-time staff member in the Division*

*Since a deferred grade (Y) is given for pre-student teaching experiences required of the student, it is necessary for the university staff member involved in those experiences to participate in the field experience. The purpose is the evaluation of the student's total performance in achieving the terminal objectives for certification.

2. Holds a Master's degree

3. Has a minimum of 3 years' teaching experience

4. Holds a Vocational Certificate

B. Preparation of the Supervisor

1. Is oriented to the policies and procedures of the Division

2. Knows the supervisory procedures required in the Division
(Mediated Instruction)

C. Is responsible directly to the Curriculum Coordinator and ultimately to the Division director

II. Selection of the Master Teacher

A. Criteria

1. Has a minimum of 2 years' teaching experience and 1 year in his present school

2. Has a minimum of two (2) different class preparations (grade level or area)

3. Has the recommendation of his department chairman or school administrator

4. Is approved by the Curriculum Area Coordinator

5. Holds tenure in his school system

B. Seminar for New Master Teachers

1. Will take a seminar for new master teachers concurrently with his first student teacher, for 1 quarter

2. May receive college graduate credit if he desires

C. Seminar for all Master Teachers

1. Meet a minimum of 1 time each public school semester

2. Additional meetings and/or workshops are suggested if a need arises

III. Selection of Centers or Center Complexes

A. Should provide facilities for adequately implementing the curriculum plans of the area

B. Establish a vocational center(s), e.g., Lincoln Park Public Schools or Murray-Wright Sr. High School, Detroit

IV. Intern Teaching

A. Placement of students and Credit Hours

1. Placed for a school semester all day
2. Placed within the student's major
3. Placed in a secondary school
4. Placed for the Fall Winter or Winter Spring quarter
5. Receive a maximum of 18 q.h. for one semester's contact

B. Progress Reports

1. Submitted at the 1/3 and 2/3 point of the contact and a final evaluation report

2. Based on the performance objectives and interfaced with the supervisor's observation report

V. The Intern-teaching Field Experience

A. Time Period

1. Full day (Regular staff members load)

2. Full school semester

B. Responsibilities

1. Shall teach 3 classes

2. Shall teach no more than two different preparations

3. Shall participate in Professional Teaching Activities* during the balance of the day

*A Professional Teaching Activity is participation in the total school program and professionally related opportunities which aids the student in synthesizing the role of the teacher.

4. Shall have plans prepared and approved prior to teaching The students shall not teach without plans

5. The Resource Book.

6. The intern teacher shall complete a minimum of 310 clock hours actually teaching the class in order to receive credit for the contact.

7. Shall have a maximum of two Master Teachers but one Master Teacher is recommended

8. Self-evaluations

   a) Critiques on daily lessons
   b) Appraisal at 1/3 - 2/3 - and final

9. Terminal objectives for intern teaching

   a. Clearly identifies self in the role of the professional teacher, as evidenced by cleanliness, appearance, social amenities, reliability and dependability.

   b. Develops, writes, and utilizes acceptable unit and daily lesson plans, using the Division format, which are relevant and functional.

   c. Prepares relevant behavioral objectives for the semester, the unit and the daily lesson plans to provide realistic learning opportunities for the class.

   d. Identifies and uses a variety of methods, techniques and supplementary materials.

   e. Communicates with others with appropriate and acceptable speech and grammar.

   f. Developed and uses safe practices in the classroom.

   g. Manages all details of classes assigned, e.g., equipment, school forms and records, supplies, and the physical facility.

   h. Analyzes his strengths and areas where effort is necessary; takes responsibility for making improvements.

   i. Evidences interest in the profession through attendance at professional meetings and workshops and membership in professional and technical organizations.

j. Establishes positive interpersonal relationships with the students, staff members, custodial personnel, parents, and significant others.

k. Progressively accepts total sponsibility for all details of the classes assigned and the classroom.

C. Evaluation of intern teaching

1. A grade of S or U will be used for the intern teaching contact.

2. The final responsibility for giving the grade is the college supervisor's

3. It is recommended that a 3-way conference be held to make the "grade" decision with the student, the Master Teacher, and the college supervisor.

4. The student's methods instructor shall be informed of the grade and the rationale for giving it to aid him/her in determining the pre-student teaching course grade(s) to change the grade of Y which was given.

VI. The Supervisory Visit

A. Purpose

1. Aid, abet, and support the intern teacher and master teacher

2. Appraisal of student teacher's progress and performance

B. Structure

1. Report to the office on arrival at school

2. Observe a full class period (or classes).

3. Recommend a 3-way conference

a. or individually
b. or on campus, if necessary

4. Arrange a visit with a minimum of one of the school administrators, e.g., principal, assist. principal, vocational education director or department chairman

5. Prepare a written report of the visit

a. a copy in student file
b. a copy to the student
c. a copy to the master teacher

6. The college supervisor shall report the number and nature of visits per week.

VII. Intern-teaching Seminar

A. Student maintains a Resource Book for Intern Teaching

1. Contains materials related to assignment, e.g., school data, class data, plans, and other associated information

2. Contains Seminar information

B. Attends all seminars with students, supervisors, and methods instructor

C. Scheduled Tuesday, 4:30 - 6:45 p.m.

D. Turns in all planning to the college supervisor:

1. Terminal goals for the semester

2. Unit plans a week before they are presented

3. Lesson plans for the past week with critiques on each lesson and lesson plans for the ensuing week

VIII. Withdrewals and Mediation in Intern Teaching

A. Methods for Withdrawal, Student Initiated

1. The student must follow the procedure established by the D.T.O.

a. In a voluntary withdrawal, the student will notify in writing the curriculum coordinator and the Divisional Director with a copy to the master teacher.

b. It is recommended that the official university withdrawal form be signed by the Curriculum Coordinator.

c. The student will notify the D.T.O.

2. Curriculum Area Initiated

a. The college supervisor and/or the master teacher may request withdrawal for failing to demonstrate the achievement of established performance goal in student teaching

b. Notify the Divisional Director of request prior to taking action.

c. Documentation will be provided by the college supervisor, the master teacher, and significant others to an appropriate degree.

B. Mediation

1. Follow procedures of D.T.O.

2. Invite the Divisional Director to participate in any conferences which affect the case.

C. Possible Recommendation

1. Continuance in another contact toward certification

2. Continuance in another contact after repeating (audit) the appropriate methods course

3. Graduation with a baccalaureate degree without certification

4. Transfer out of the Division of VAE

IX. Other Field Experiences

A. School Oriented Experiences

1. All Division majors are required to complete a 50 clock hour planned field experience at the sophomore level, e.g., as a teachers aide in a secondary school.

2. The field experience shall be accompanied by a weekly seminar.

a. The seminar topics may be in such areas as the role of the teacher, overview of vocational education, the school-community, the job of the teacher, etc.

b. An evaluation of the experience will be turned in by the seminar teacher and the student at the end of the quarter.

B. Coop.-Work Experiences

1. A student may receive college credit for work experience related to his major.

   a. The work must be approved prior to registering for the credit

   b. The work station and work assignment must be approved by the student's Curriculum Area.

   c. The maximum number of credit hours will be determined by the curriculum area and presented to the Administrative Committee for final approval.

2. The work experience will be evaluated by the student.

   a. in relation to his projected classroom responsibilities
   b. by the College supervisor in relation to the student's achievement

C. Technical Development Experiences

1. Company Training Programs

2. Applied Management Center

3. Community College Technical Courses

4. Others

W A Y N E S T A T E U N I V E R S I T Y

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas:
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE: Priorities and Load Assignment - Committee D

STAFF MEMBERS: Willard M. Bateson, Fred S. Cook, William A. Hulle, Frank W. Lanham, G. Harold Silvius

STATEMENT OF PURPOSE:

This report is presented in the form of a model, illustrated in Appendix A and Appendix B. Appendix A identifies the major tasks of the Division and Curriculum Areas with assigned priorities of "A" (very high) to "E" (very low). Appendix B suggests a proposal for allocating needed units of staff time for task completion in any one quarter.

SPECIFIC RECOMMENDATIONS:

1. That priorities be established, as shown in Appendix A: Division and Curriculum Area tasks are ranked in order of importance on a five point scale ranging from "A" (very high) to "E" (very low).

2. That the faculty load assignment unit be based on two-and-one-half clock hours per week, through a quarter, to accomplish assigned tasks and that a full-time faculty load assignment be fifteen units (thirty-seven- and -one-half clock hours per week).

3. That the load assignment for instructors, while working on a doctorate, be thirteen units (thirty-two-and-one-half clock hours per week).

4. That the coordination of Priorities and Load Assignment may be accomplished as illustrated in Appendix B.

APPENDIX A

PRIORITIES FOR ACCOMPLISHING MAJOR DIVISION AND CURRICULUM AREA TASKS

Key:

Priority A--Very High Level
Priority B--High Level
Priority C--Medium Level
Priority D--Low Level
Priority E--Very Low Level

Statement: The priorities are assigned on the basis of tasks requiring immediate attention by the faculty for implementation of the WSU System for Vocational and Applied Arts Education and do not reflect on the value assigned to a task as this point in time.

Priority A*--Very High Level, requires immediate attention and full staffing for implementation of Systems Approach.

1. Teach Division or Curriculum Area professional courses for certification.
2. Teach Division or Curriculum Area professional courses for graduation.
3. Teach Curriculum Area technical courses for certification.
4. Teach Curriculum Area technical courses for graduation.
5. Assist in the coordination and revision of Counseling and Plan of Work procedures.
6. Prepare proposals for funding.
7. Administer Divisional and/or Curriculum Area activities.
8. Attend Division meetings.
9. Attend Curriculum Area meetings.

Priority B--High Level, important and requires improvement from present level.

10. Supervise intern teaching.
11. Assist staff in directing Intern Teaching Seminars.
12. Attend College meetings.

Priority C--Medium Level, to be maintained but may not be staffed for optimum development.

13. Manage and supervise Cooperative Work-Study and Technical Development Experiences, and Directed Study.
14. Administer Trade Competency Examinations.
15. Serve as Major Adviser for Doctoral Programs.
16. Advise Student Organizations and Activities.

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*The numbered tasks under any one of the five priorities are not in rank order; all are considered of equal importance under the classification.

Priority D--Low Level, minor importance, staff at minimal level so program may be maintained while Systems Approach is under development.

17. Process Vocational Certification.

Priority E--Very Low Level, effort and staffing at a very minimal level.

18. Represent the University with governmental agencies, educational institutions, and community.
19. Provide personal service to governmental agencies, educational institutions, and community.
20. Engage in professional writing or research.
21. Serve as a member of a Doctoral Committee.

APPENDIX B

A PROPOSED PRIORITY AND LOAD ASSIGNMENT WORKSHEET

Course No. VAE	Course Title	Priorities & Load Assignment	Sp 71	Su 71	Fl 71	Wr 72	Sp 72	Su 72	Fl 72	Wr 73
0000	Intro to	PR*	B	E	A	E	C	E	C	E
		L.A.+	4	0	6	0	4	0	4	0
1111	Methods & Materials	PR	E	B	E	A	E	C	E	C
		L.A.	0	4	0	6	0	4	0	4
2222	Technical Field Experiences	PR	C	E	C	C	C	E	C	C
		L.A.	4	0	4	4	4	0	4	4

Description of use of the Worksheet:

Course VAE 0000.
Spring, 1971: rated Priority B. This means that staff effort (4 units) is needed to prepare for the integration of the course into the Division Systems Approach Sequence.

Summer, 1971: course not offered.

Fall, 1971: rated at Priority A. Six units of time are needed during this quarter as this course becomes a Division offering with team faculty effort.

Winter, 1972: course not offered.

Spring, 1972: rated at Priority C. Four units of time are needed to offer this course which has been integrated into the Systems Sequence.

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*Priority for Course: "A" is very high while "E" is very low.

+Load Assignment for Offering the Course in Terms of Estimated Time Units: 2½ clock hours per week = one unit of load. "0" means that course is not scheduled in that quarter.

WAYNE STATE UNIVERSITY

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas:
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE: Team Planning and Responsibility

STAFF MEMBERS: James Dearring, Kenneth Cerny, Tommie Johnson, and Marian McMillan

STATEMENT OF PURPOSE:

The committee was given the charge of developing plans, procedures, and recommendations for:

1. Intern Teaching Seminar

2. Introductory Master's Seminar

3. Terminal Master's Seminar

The first charge focused on the input for the portion of our initial system which is directed toward the certification program - Intern Teaching Seminar.

Because the Division must concurrently begin planning a systemic approach to the post certification experiences, this committee was also assigned the responsibility of developing recommendations for the Introductory and Terminal Master's Seminars.

Specific concerns dealt with the composition and responsibilities of the planning teams, recommended experiences for students, implementation, assessment, and target dates for each of these facets.

SPECIFIC RECOMMENDATIONS:

INTERN TEACHING SEMINAR

I. Selection of Planning Team

A. The Vocational and Practical Arts Curriculum Coordinators will select a planning team from the respective Division curriculum areas by April 30, 1971.

1. Include full-time vocational staff members who are involved in the intern teaching field experience and "methods" classes.

2. Identify and include appropriate interdisciplinary personnel such as representatives from the Directed Teaching Office, Educational Psychology, and others.

B. Administrative committee will designate appropriate Divisional personnel to carry out these policies.

II. Responsibilities of the Planning Team

A. Formulate behavioral goals for the Intern Teaching Seminar. (Utilize the behavior goals started by the Policies and Procedures for Field Experiences committee at Haven Hill, March, 1971.)

1. Organize weekly Division seminars around major topics such as Classroom Discipline.

2. Identify and use supportive personnel[1], outside resources[2], and Divisional personnel that contribute to major topics.

B. Determine number of Divisional and curricular area seminars.

C. Formulate seminar plans to be reviewed by the Administrative Committee of the Division no later than June 1, 1971.

D. Make recommended modifications in the seminar plans by July 31, 1971.

E. Develop an evaluative system for continuous assessment of the seminar by the interns, the master teachers, the Division staff and others.

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[1]Faculty members in the College of Education from disciplines and services such as Educational Psychology, Instructional Technology, Teacher Placement, etc.

[2]University personnel from outside the College of Education such as Department of Family and Consumer Resources, School of Business Administration, College of Engineering, personnel from other institutions, community resources, mediated learning, etc.

INTRODUCTORY MASTER'S SEMINAR

I. Recommend that the planning team be composed of Dr. Frank W. Lanham, and Dr. G. Harold Silvius.

II. Responsibilities of Planning Team:

A. Formulate behavioral goals for the Introductory Master's Seminar

B. Plan experiences for master's applicants that might include the following:

1. Develop a philosophy of vocational education

2. Discuss trends in vocational education

3. Begin development of an individual or team[3] project, essay, or thesis that will be completed during, or at the end of, the Terminal Master's Seminar.

4. Establish "check points"[4] within the format of the project, essay, or thesis during the interim period between the Introductory and Terminal Master's Seminars

5. Discuss and demonstrate simple research techniques

6. Engage the participation of master's and doctoral candidates in sharing professional experiences with master's applicants.

C. Present recommended plans for the Introductory Seminar to the Division staff for review by June 1, 1971

D. Make recommended modifications in the seminar plans for implementation by July 31, 1971, for the Fall, 1971, seminar; by January 31, 1972, for Spring, 1972, seminar

E. Formulate plans for continuous assessment of the Introductory Seminar by the seminar students, teaching faculty, Division staff, and others.

TERMINAL MASTER'S SEMINAR

I. Planning team composed of Professor Gerald B. Baysinger, Dr. Fred S. Cook, Dr. Frank W. Lanham, Dr. Marian McMillan, and Dr. G. Harold Silvius

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[3]An interdisciplinary approach by graduate students in a specialized area or various areas within the Vocational and Applied Arts Education Division working on a project, essay, or thesis.

[4]Specified times when the master's candidate will meet informally or formally with designated Divisional staff members.

II. Responsibilities of the planning team

A. Formulate behavioral goals to reflect a continuing relationship between the introductory and Terminal Seminars

B. Plan culminating experiences for master's candidates

C. Establish criteria for check points, acceptance, or final presentation of project, essay, or thesis that began in the Introductory Master's Seminar

D. Present recommended plans for the Terminal Master's Seminar to the Division staff for review by October 1, 1971

E. Make any recommended modifications in the seminar plans for implementation by November 30, 1971, for Winter, 1972, seminar; by March 31, 1972, for Summer, 1972, seminar

F. Formulate plans for continuous assessment of the Terminal Master's Seminar by the seminar students, teaching faculty, Division staff, and others.

W A Y N E S T A T E U N I V E R S I T Y

College of Education

Division of Vocational
and Applied Arts
Education

Curriculum Areas:
Business and Distributive
Family Life
Industrial

HAVEN HILL RETREAT

21-26 March 1971

TITLE OF COMMITTEE G: Plans for Formulation and Coordination of Performance Goals for All Courses at Division and Curriculum Levels

STAFF MEMBERS: James R. Dearring, Kathleen M. Herschelmann, William A. Hulle, Bette LaChapelle, G. Harold Silvius

STATEMENT OF PURPOSE: It is the purpose of this committee to formulate and coordinate plans for developing performance goals for all courses which the Division supports financially. (Schematic in Appendix A)

SPECIFIC RECOMMENDATIONS:

I. Recommended Steps for Development of Division Terminal Objectives:

A. Course information be developed by each staff member for each course he teaches plus courses in the Division which will be developed by assigned staff members. (Use course data form, Appendix B.)

B. All the course materials be given to a behaviorial specialist to refine the course objectives in behaviorial goal terminology.

C. Return the specified objectives to each staff member and Curriculum Area staff for validation of meaning.

D. Give the refined course data sheets to an educational systems analyst such as Francis Brown to analyze and cross check for duplication.

II. Development of Course Data Forms:

A. Assignment of area courses to staff by Curriculum Area Coordinators.

B. Assignment of Division courses by Committee G taking into consideration:

1. Two courses per full-time staff member (when possible)

2. According to whoever taught the course which became a Division course

Recommended assignment*:

VAE 4192	Jim Dearring
VAE 4196	Jerry Baysinger
VAE 6192	Kathy Herschelmann
VAE 6195	Harold Silvius
VAE 6199	Fred Cook
VAE 7192	Bette LaChapelle
VAE 7194	Tommie Johnson
VAE 7195	Willard Bateson
VAE 7196	Bill Hulle
VAE 7197	Harold Silvius and Frank Lanham
VAE 7198	Frank Palmieri
VAE 7199	Fred Cook, Frank Lanham, Jerry Baysinger, Marian McMillan and Harold Silvius
VAE 8198	Ken Cerny
VAE 8199	Marian McMillan
VAE 9196	Frank Lanham
VAE 9199	Willard Bateson

*Assigned staff member should check with all Division staff who have previously taught the course to which he is assigned.

C. Time Line

1. Staff members to stagger turning in these completed course data sheets to the Coordinators.

2. All completed course data forms will have been turned into the Coordinators by April 27, 1971 for area staff discussion.

3. All completed course data forms will be turned into the Director by the Coordinators on April 30, 1971.

D. Technical and Content Courses (paid by VAE)

1. To be developed by each staff member responsible for such course.

2. To be developed prior to the first time the course is taught beginning Fall Quarter of 1971.

E. Other Technical and Content Courses Required in the Major

1. Inform chairmen of technical and content course areas of Division policy.

2. Request course data forms for these courses.

III. Semi-Final List of Terminal Objectives (Appendix C)

A. Demonstration of competencies will result in general and/or provisional vocational certification

1. Cotrell cluster categories plus one Division original[1]

2. That Committee G continue work on the Semi-Final List of Terminal Objectives. Develop a list of these objectives no later than May 15 and report them to the Division staff.

B. Receives recommendation for general and/or provisional vocational certification

IV. Baccalaureate Degree, General and/or Provisional Vocational Certification

(The identified responsibilities within the structure of the Division Retreat lead this far, and the Committee is

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[1] EMERGING TEACHER EDUCATION CURRICULAR MODELS, Fourth Annual National Vocational-Technical Teacher Education Seminar Proceedings, The Center for Vocational and Technical Education, The Ohio State University, November, 1970, pp. 23-32.

aware that it has an additional purpose to identify performance goals for continuing certification and Master's and Doctoral degrees.)

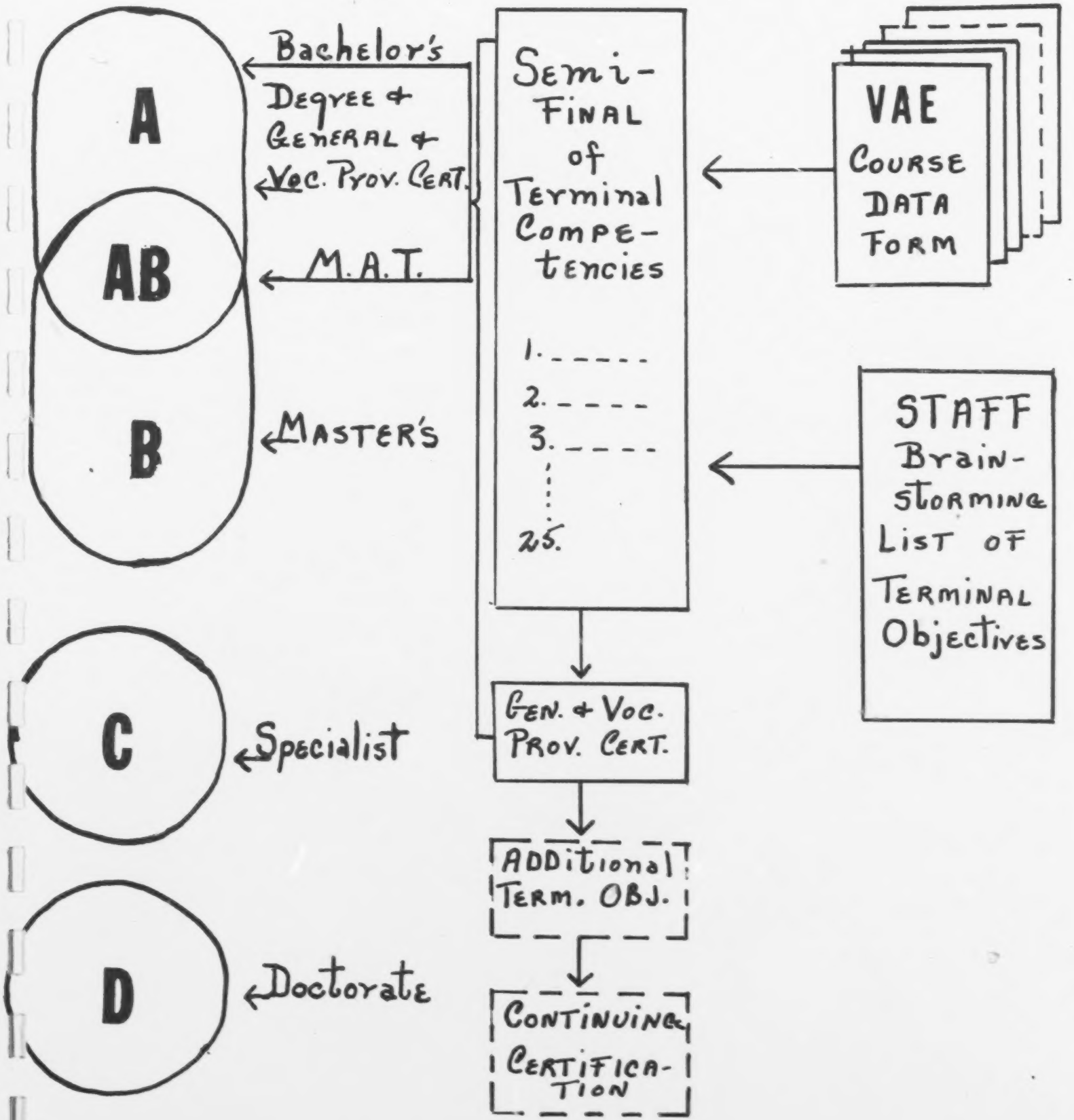
V. Continued Work on the Plans for Formulation and Coordination of Performance Goals for All Courses at Division and Curriculum Levels

A. Operationalize performance goals and evaluation for all Division courses by no later than September, 1972.

B. Continue the services of this committee as a coordinating group to aid in the September, 1972 implementation of total Division course operation by performance goals.

APPENDIX A

SCHEMATIC PLAN FOR INITIAL CERTIFICATION
and
ADVANCED WORK



APPENDIX B

W A Y N E S T A T E U N I V E R S I T Y

College of Education

Division of Vocational
and Applied Arts
Education

Business & Distributive (Green)
Family Life (Salmon)
Industrial (Blue)

COURSE TITLE: *Intermediate Typing*

COURSE NUMBER: *GB 0231*

CURRENT CATALOG DESCRIPTION:

A combined skill building and methods of teaching typewriting.

Assumptions about the student's background (knowledges and skills, etc.) upon which the following course objectives have been developed:

Have minimum of six months' work in an office and therefore know general office procedures and have had a formal course in typewriting or know the principles of typewriting.

GOALS OR OBJECTIVES (usually not more than 10):

1. *Demonstrate ability to type by touch.*
2. *Demonstrate ability to type by stroke level.*
3. *Demonstrate ability to write a "mini" lesson.*
4. *Demonstrate ability to teach a "mini" lesson.*
5. *Demonstrate ability to develop terminal goals for a one-semester course.*
6. *Demonstrate ability to develop intermediate goals for a one-semester course.*
7. *Demonstrate ability to write a detailed lesson plan following specified criteria.*
8. *Research and annotate subjected references and relate these to the written assignment.*
9. *Demonstrate ability to incorporate specific teaching materials and techniques in his lesson plan.*
10. *Utilize methods, techniques, and specially prepared materials in his student teaching.*

OVER

YOUR PROCEDURES FOR EVALUATION OF STATED GOALS/OBJECTIVES:

Assessment of satisfactory or unsatisfactory in terms of written work and class demonstrations which is discussed with the student at the end of the term. If satisfactory, the student receives a "Y" grade and goes into student teaching. If unsatisfactory, the student must redo part or all of the methods course before he is permitted to do his student teaching.

APPENDIX C

PART 1

CORE BASIC REQUIREMENTS

CATEGORIES	BRAINSTORMING GOALS BY NO.
1. Program Planning, Development, and Evaluation	11, 35, 43, 51, 69
2. Instruction Planning	1, 2, 5, 6, 12, 13, 14, 17, 34, 37, 40, 50
3. Instruction - Execution	29, 41, 44, 49, 52, 61, 63, 71
4. Instruction - Evaluation	15, 36, 57, 65
5. Management	3, 4, 7, 9, 10, 23, 24, 25, 26, 27, 28, 30, 31, 45, 53, 54, 55, 56, 62
6. Guidance	22, 32, 33, 64, 70
7. School-Community Relations	18, 38
8. Student Vocational Organizations	19
9. Professional Role Development	8, 16, 21, 58
10. The Role of the Teacher*	20, 66, 67
	Not used because of duplication: 39, 42, 46, 47, 48, 59, 60, 68

*Committee G redefined no. 10 as a new category.

PART 2

BRAINSTORMING GOALS LISTED BENEATH SPECIFIC CATEGORIES

1. PROGRAM PLANNING, DEVELOPMENT AND EVALUATION

11. Develop and provide programmed (individualized instruction).
35. Develop plans for the term's work.
43. Recognizes relationship between other disciplines in the school and his own discipline and teaches accordingly.
51. Participates in faculty curriculum development.
69. Plans for needed facilities and equipment.

2. INSTRUCTION PLANNING

1. Using appropriate resources to plan learning needs of students.
2. Develop unit teaching plans.
5. Select text, reference and visual materials.
6. Develop or procure other essential teaching aids.
12. Reports (uses) school facilities and services.
13. Using technical training in a relevant way.
14. Maintains sources of reference material--secures and selects appropriate content.
17. Plans and organizes for group work in a classroom.
34. Provides for range in abilities.
37. Develops integrated lesson plans.
40. Develops new materials.
50. Develops individualized instruction.

3. INSTRUCTION - EXECUTION

29. Provides help for student needing assistance (individual-group).
41. Teach lesson using detailed lesson plan.
44. Demonstrates ability to use appropriate instructional strategies.
49. Gives a demonstration to an entire class.
52. Present televised instruction.
61. Demonstrates awareness of change in methods, materials, and procedures through appropriate channels.
63. Encourage "wholesome" attitude towards tools and equipment.
71. Utilize individual student talents to help other students.

4. INSTRUCTION EVALUATION

15. Plan and use an evaluation system.
36. Measure educational achievement in relation to behavioral objectives.
57. Evaluate student growth and development.
65. Writes a critique on each lesson taught.

Brainstorming Goals Listed Beneath Specific Categories Continued

5. MANAGEMENT

3. Prepare directions for a substitute teacher.
4. Provides cumulative records.
7. Establish order of business each session.
9. Organize class beginning of term (class mgt.).
10. Manage student attendance.
23. Plan and construct suitable tool racks (storage).
24. Provide a tool and supply checking system.
25. Purchase supplies, equipment and maintain an inventory.
26. Manage funds for sales of materials.
27. Develop systems and procedures to manage mechanical problems previously identified.
28. Maintain class morale.
30. Write a requisition.
31. Classroom control.
45. Arrange students for study and demonstration.
53. Plan and maintain a safety program.
54. Take precautions against fire and other disasters.
56. Establish procedures with concern for teacher liability.
55. Give first aid and care for an injured person.
62. Prepare shop or lab to be closed at end of term.

6. GUIDANCE

22. Using student aspirations and community resources.
32. Secure pertinent data concerning students.
33. Identifies abnormal behavior requiring teacher action.
64. Deal with individual discipline cases.
70. Provide personal, educational, and occupational guidance.

7. SCHOOL-COMMUNITY RELATIONS

18. Use community resources.
38. Involve others in development and projection of Vocational programs.

8. STUDENT ORGANIZATIONS

19. Plan a student organization.

9. PROFESSIONAL ROLE DEVELOPMENT

8. Association with professional association.
16. Develop or plan for continuing education.
21. Familiarizes with vocational education legislation.
58. Evaluate teacher competency (prof. certif.) measuring teacher effectiveness.

Brainstorming Goals Listed Beneath Specific Categories Continued

10. THE ROLE OF THE TEACHER

20. Proper communication skills.
66. Practices appropriate social amenities.
67. Identifies self with good teacher via good physical appearance and personal hygiene habits.

MISSION:

PROVIDE SERVICES TO OTHER COLLEGE OF EDUCATION DIVISIONS, THE UNIVERSITY AT LARGE, AND OTHER AGENCIES

RESPONSE:

COMMUNITY COLLEGE BROCHURE

The Industrial Education staff at WSU has prepared manuscript for a brochure to assist community college students in transferring to WSU, as they prepare to become industrial education teachers. This has been done in concert with a study being conducted by Dr. John F. Feirer and Dr. John R. Lindbeck of Western Michigan University that is entitled "Development of Junior/Community College Curricula for Future Teachers of Industrial Education". The plan is to make this brochure available to all community colleges in the WSU service area.

The manuscript for this brochure was coordinated by J. Kenneth Cerny, Associate Director of this study, with the help of key staff members in Industrial Education at WSU and guidance personnel of Macomb County Community College. Joint meetings that will be called "Articulation Conferences" will be scheduled by the staff members of the WSU Vocational and Applied Arts Education and guidance personnel of Detroit area community colleges. The purpose of these meetings will be to facilitate the transition of college students from a community college to the unit of Vocational and Applied Arts at WSU.

HOW TO GET IN

Freshman/Sophomores with less than two years of college work should write or call the University Office of Admissions, Room 116 ASB, 5950 Cass, Detroit, Michigan 48202, or phone 577-3560 for an application.

Senior college students entering with two or more years of college credit should contact the Admissions Office, Room 489 Education Building, College of Education, Wayne State University, Detroit, Michigan 48202, or phone 577-1600 for an application.

When completing the application, the student should fill in Section C, indicating INDUSTRIAL EDUCATION. Return the completed application in person or by mail.

The student will then be notified to make an appointment with an adviser in Industrial Education. The adviser will explain the complete program, make out a plan of work with the student, and provide the student with personal assistance until he graduates.

INDUSTRIAL-VOCATIONAL OPTION

To teach Industrial-Vocational subjects a vocational certificate is required. This certificate requires work experience in the trade or occupation. In order to obtain this vocational certification the student must demonstrate his competency through a trade competency examination.

Trade competency examinations are available in the following:

Aircraft and Engine Mechanic
Auto-Body Designer
Automobile Body Repairman
Automobile Mechanic
Cabinetmaker
Carpenter
Die Designer
Die Maker
Electrician
Electronics Mechanic
Model Maker
Pipe Fitter
Printer
Refrigeration Mechanic
Sheetmetal Worker
Television Service and Repairman
Tool Designer
Toolmaker
Welder, Combination
Occupational Specialization

WOULD YOU LIKE TO BECOME

A TEACHER OF

INDUSTRIAL ARTS

OR

INDUSTRIAL-VOCATIONAL

SUBJECTS?

VOCATIONAL AND APPLIED

ARTS EDUCATION

INDUSTRIAL EDUCATION

WAYNE STATE UNIVERSITY

DETROIT, MICHIGAN 48202

REQUIREMENTS FOR CERTIFICATION AND DEGREE

GENERAL EDUCATION REQUIREMENTS

Minimum 60 Quarter Hours

English and Speech	12-16	Social Science	16
Science	16	Physical & Health Education.	6

Electives Depending on Minor/Major 10-51

PROFESSIONAL EDUCATION REQUIREMENTS

Minimum 40 Quarter Hours

Education Core	12	Methods of Instruction	8
Survey Industrial Education.	4	Teaching Internship.	16

INDUSTRIAL EDUCATION

INDUSTRIAL-ARTS MAJOR 59-62 Hours

Materials and Processes.	20
Power and Mechanical Systems	12
Electrical and Electronic.	12
Drafting	12
Senior Project	3-6

BACCALAUREATE DEGREE

MICHIGAN SECONDARY PROVISIONAL TEACHING CERTIFICATE

TEACH INDUSTRIAL ARTS IN JUNIOR AND SENIOR HIGH SCHOOLS

INDUSTRIAL-VOCATIONAL MAJOR 45-54 Hours

OCCUPATIONAL COMPETENCY IN ONE OF THE SEVERAL AVAILABLE VOCATIONAL OPTIONS IS REQUIRED (LISTED ON BACK OF THIS BROCHURE). REQUIREMENTS IN THE SELECTED OPTION REPRESENTS THE TEACHING MAJOR, AND IS SATISFIED BY THE COMPETENCY EXAMINATION.

BACCALAUREATE DEGREE

MICHIGAN SECONDARY PROVISIONAL TEACHING CERTIFICATE WITH VOCATIONAL ENDORSEMENT OR VOCATIONAL CERTIFICATION.

TEACH IN VOCATIONAL OPTION (TEACHING MAJOR) IN SENIOR HIGH SCHOOLS, AREA VOCATIONAL HIGH SCHOOLS AND IN COMMUNITY COLLEGES.

PHASE II

MISSION:

DEVELOP A SYSTEM FOR THE PERPARATION OF TEACHING AND SUPERVISORY PERSONNEL IN THE FIELD OF VOCATIONAL AND APPLIED ARTS EDUCATION

RESPONSE:

SYSTEMS APPROACH

A working paper entitled the "Systems Approach" was developed under the leadership of Dr. G. Harold Silvius as a model for the organization of educational programs. The "Systems Approach" advanced is concerned with the growth and development of each student measured against specific performance criteria as encompassed in a system for the development of teachers. The "Systems Approach" explores in great detail such topics as: a plan for assessing initial competence in the utilization of men and machines; with specific reference to the Resnick Model for a Systems Approach to Curriculum Development and the Jelden Learner Control Systems Approach to the teaching of electronics.

Working Coping Only
NOT FOR PUBLICATION

SUBJECT: THE SYSTEMS APPROACH

FROM: G. Harold Silvius

TO: Students Enrolled in IED 6185 and Other Interested Persons at WSU

DATE: April 8, 1971

To organize educational programs with concern for the growth and development of each learner, measured against specific performance criteria (or outcomes) educators have turned to practices employed in industry in systems design, analysis, management, and evaluation. These practices that have worked well in industry to further technological advance are now being applied with considerable success in curriculum development and assessment with the help of educational specialists in instructional technology. To illustrate, several school systems throughout the United States have entered into contracts with outside agencies[1] or consultants, where the remuneration for professional services is based on student performance outcomes in basic subjects (post-training proficiency over competencies when entering the program).[2]

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[1]Examples are Educational Development Laboratory, a subsidiary of McGraw Hill and Science Research Associates.

[2]During the 1969 fiscal year, the USOE had nearly $2 million in federal funds awarded to private consultants, and the USOE had about 170 million, during that year, in outstanding contracts with profit and nonprofit organizations outside of the government. These data were reported in "Washington Report". Phi Delta Kappa, Vol. LII, No. 1 (September, 1970), p. 63. Several of these experiments in performance contracting with private industry for rapid improvement in pupil achievement are described in an article by Stanley Elam, "The Age of Accountability Dawns in Texarkana, and a featured summary on "Where the Action Is in Performance Contracting", Phi Delta Kappan, Vol. LI, No. 10 (June, 1970, pp. 509-514. To illustrate, the Dallas Independent School District has embarked upon performance contracting in math, reading, communications, achievement motivation, and occupational training. In its first year, the Dallas program focused on grades 9-12. Teachers are allowed to compete with contractors. Funds are set aside for mini-grants for teachers to develop performance projects.

The systems approach is predicated on an essential interaction between learners, members of the teaching team, materials, machines, and technicians (the components of the system). Through the interdependency of components it is possible to have students arrive at a desired and predicted educational outcome, generated through the process from a calculated input. Many of the contracts are being written with remuneration for professional services based on predicted growth in a subject area.

A unique feature of the instructional system is the provision for each learner, within the defined population, to move at his own rate through a sequence of learning experiences, and then demonstrate behavior that meets defined criteria. The system is focused on the initiative of the learner rather than the acts of the teacher. And it is a practical approach to learning as it employs a great variety of communication and learning principles, in matching individual students with an effective learning style.

In summarizing the systems approach, it is well to again look to its original intent in business and industry, since systems design, analysis, and application was developed there before it was applied in Education. Fryklund states that the systems approach is

> ...a relatively recent research technique in business and industry. Its purpose is to identify and overcome difficulties in effective use of resources in management, production, and distribution of goods. It is the grand strategy of management for overall planning, and in the process, the existing or potential problems of management, production, and distribution are assumed to be identified and solved. The term is also used, in a limited way, in connection with computer planning and programing.[3]

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[3]Verne C. Fryklund, "What is Systems Analysis?", Industrial Arts and Vocational/Technical Education, Vol. 59, No. 4 (April, 1970), pp. 33-34.

Plan for Assessing Initial Competence

A basic premise that underlies the systems approach is that there must be a sound plan for determining what the student knows and can do in respect to each identified end-performance objective (or outcome). This is being done in different ways by (1) a pre test, (2) a trail run by the student under observation, or (3) student assesstment (a judgment made by the learner).

Men and Machines Utilized

As previously mentioned, the learner within the defined population moves at his own rate and directs his own activities. He is given opportunity to demonstrate behavior that meets progressive steps leading to specified post-training proficiency. The system is predicated on the responses of the learner rather than what the teacher does as he directs the educational process. This is done as the process utilizes both men and machines and attempts to maximize mediated instruction.[4] The intent here is to create the time through mediated instruction that is needed by professionals for their roles as managers of the system.

In the systems approach, there is constant concern for matching the individual student with the presentation modes[5] that motivate him. In the design and management of the system there is, therefore,

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[4]Where the learner is self-taught, on a highly individualized or small group basis, with available or developed pre-recorded soft ware (teaching materials) such as single concept films, videotapes, motion picture films, and programed instruction.

[5]Term used in the systems approach that is synonymous with teaching method.

provision for needed live demonstrations by the teacher, simulated life and work experiences, supervised performance for skill development, discussions of pertinent issues, computer-assisted instruction, on-the-job training, and the like.

The Resnick Model

Figure 1 is a model for a systems approach developed by Harold S. Resnick of the Industrial Education Department, Temple University. He would be the first to stress, however, that this is not "the" model for all situations but merely an illustration that depicts how he would go about organizing instruction within the systems approach. The two top boxes of his model suggest general specifications for instruction similar to those suggested and illustrated in Chapter 5 of Organizing Course Materials by Silvius and Bohn.[6] The next major step in his systems approach is to establish the overall and major terminal performance objectives for each course of study. (The reader is referred to factors to be considered in formulating behavioral objectives described in another available departmental release for WSU students in VAE 6185.) It should be noted that Resnick suggests that the teacher, or teaching team, next step be a task-activity analysis that would identify content and activity that would provide the vehicle for the needed educational experience. This is the instruction that is essential for moving the student, participating in the course, from the competence that he brought to the course, to that specified in the terminal performance objective (or outcome). It should be noted, also,

[6]G. Harold Silvius and Ralph C. Bohn, Organizing Course Materials in Industrial Education (Bloomington, Illinois: McKnight & McKnight Publishing Company, 1961), pp. 112-134.

A SYSTEM FOR CURRICULUM DEVELOPMENT

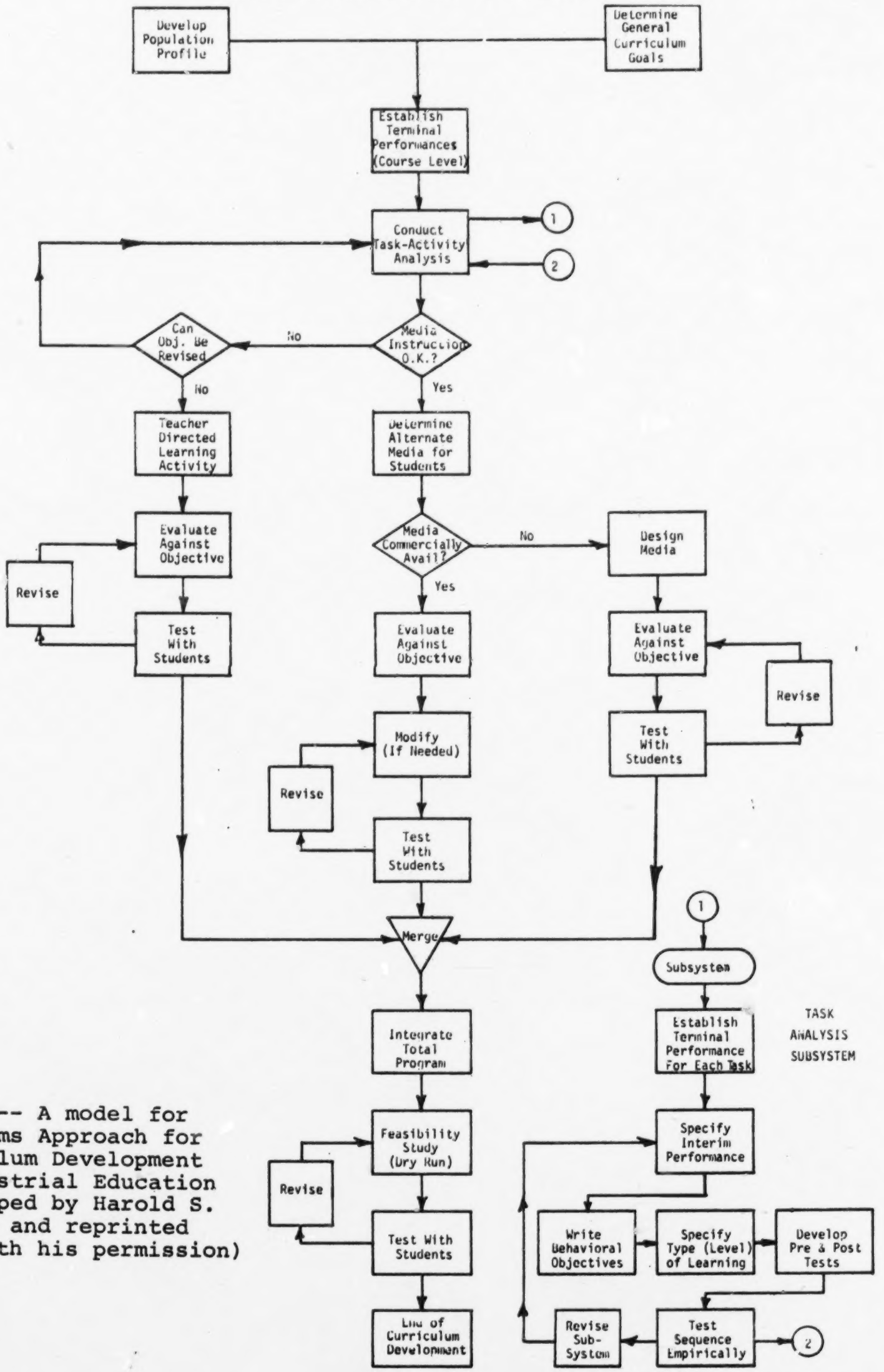


Fig. 1 -- A model for a Systems Approach for Curriculum Development in Industrial Education (Developed by Harold S. Resnick and reprinted here with his permission)

that Resnick provides further for a subsystem (lower right corner of his model) where a subperformance objective, with its content be identified, for each major task within the hierarchy of the course.

At this point in Resnick's plan, a decision needs to be made for each behavioral objective and the task identified for its fulfillment (where decisions need to be made in the design of a system, this is indicated by a diamond shaped box in the model). In this case, that decision is -- could mediated instruction (where the student is self-taught) be used to reach the specific terminal objective? If so, then the professionals developing the program need to determine if the soft and hardware, to facilitate such instruction are commercially available, or if they will need to be developed. If mediated instruction is not feasible for teaching a package of instruction, there are two possibilities: first, to rework the behavioral objective so that the instruction might be accomplished with such media as film loops, movies, videotapes, or programed instruction. If this is not possible, then steps need to be taken to have that part of the course taught by teacher directed instruction.

There is provision in Resnick's model to refine and improve the effectiveness of each package of instruction by 1) evaluating content and activities against the objective, 2) testing the students, and 3) revising where desirable. Finally, all of the packages are merged and put together as one course. The final product, then, needs to be road tested with a trial run and then further refined as the teacher continues to use the system with subsequent students.

Jelden's Learner Controlled System

David L. Jelden has applied the systems approach at Colorado State University in the teaching of electronics. The major units in the course have been developed as a series of Learner Controlled activity packets. Each packet is organized as a major unit of the course (e.g. #6 RESISTANCE, #7 VOLTAGE, #8 CURRENT, #15 METER MOVEMENTS, and #16 OPERATION & CALIBRATION OF OSCILLOSCOPES). Figure 2 is the basic flow chart illustrating the sequence followed as a student proceeds through the unit. David L. Jelden describes this "Learner Controlled Education" (LCE) system as one that does not impose the teacher's method of learning on the student. He describes LCE as:

> ...individually oriented, self-instructional, and multi-media in approach. It is based on the premise that students can be taught to interpret the behavioral goals of a course, determine procedures that will permit attainment of the goals, and select and carry out the procedures which they consider desirable for attaining the goals. The learner controlled method is in contrast to the teacher-controlled method in which the teacher established the goals and determines the approach by which the outcomes be reached. In both methods, the content, in the main, is determined by the teacher. The methods differ in terms of who determines the procedures for attaining the goals. Putting it bluntly, the teacher does not impose his methods of learning on the student.[7]

Each of the packets in Jelden's system has behaviorally stated educational goals, recommended sources of information to achieve these goals, choices of sequences preferred by the student, self-evaluations integrated into the lesson, and a packet evaluation designed to have the student explain, in his own words, his understanding of the task leading to the attainment of the goals.[8]

[7]David L. Jelden, "Individualized Instruction: A Meaningful Educational Experience," Journal-Michigan Industrial Education Society, Inc.; Vol. XXIX, No. 4 (June, 1970) p. 3 and 10.

[8]Taken from p. 1 of the Descriptive Materials prepared by Dr. David L. Jelden to accompany the series of packets covering his LCE program in Electronics.

Each packet is organized as an independent color-code syllabus on 8 1/2 x 11 paper. Yellow is used for "objectives" and "student assessment"; the "self-tests" are on pink paper; while white is used for a statement of "rational", "recommended media" and "study guides"; while the suggested "lab activity" is placed on green paper. The pages are coded by packet numbers and numbered so that the learner may be readily directed to the needed material (e.g. "lab activity" in Packet 8, covering "Ammeter Measurement" is on page "8-8").

The reader is directed to the wording of the symbols in Jelden's flow chart, shown as Figure 2.

Primary Objective

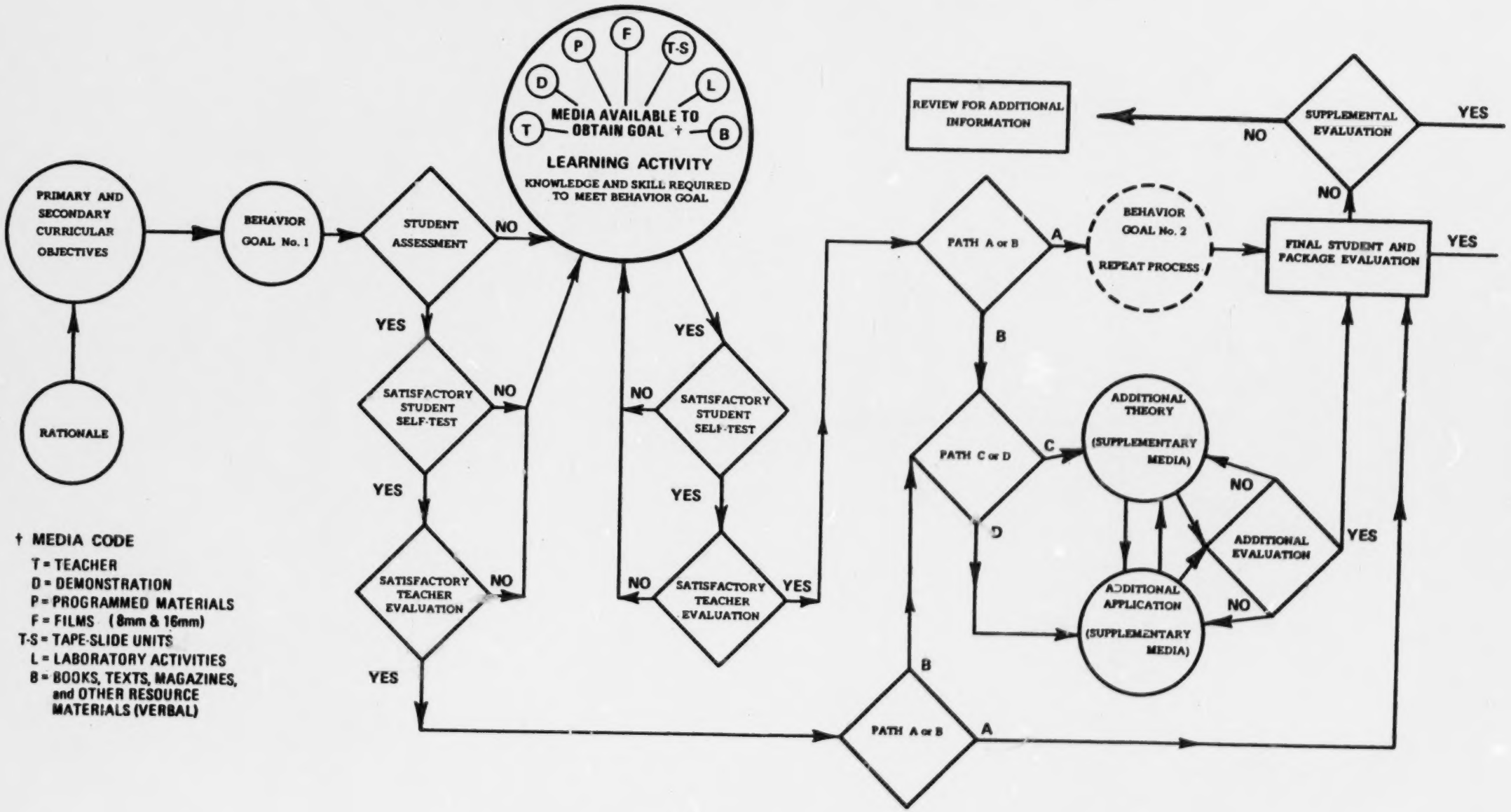
This is the statement of the overall purpose of a block of instruction covering what the student should understand when he has finished with this block of instruction. It is the title of the unit and would be similar to the chapter heading in the usual technical book in industrial education. (e.g. the"primary objective" of Jelden's first activity packet is INTRODUCTION TO ELECTRICITY).

Rationale

This is a statement to motivate this student and stress the significance of the unit. For example, the rationale for CURRENT, Packet No. 8, is

> Electrical current is the flow of electrons. To describe the nature of an electrical circuit, it is often necessary to measure and understand the effects of current in the circuit.
>
> Three sections are included in this packet. Section ONE presents an understanding of current -- its practical

LEARNING ACTIVITY PACKAGE



† MEDIA CODE

T = TEACHER
D = DEMONSTRATION
P = PROGRAMMED MATERIALS
F = FILMS (8mm & 16mm)
T-S = TAPE-SLIDE UNITS
L = LABORATORY ACTIVITIES
B = BOOKS, TEXTS, MAGAZINES, and OTHER RESOURCE MATERIALS (VERBAL)

Fig. 2. Flow Chart Showing the Instructional Steps Followed in the Jelden's "Learner Controlled Education". (This figure is printed from material distributed by Dr. David L. Jelden and used with his permission.)

> unit, its measured units, and its exact nature. Section TWO investigates lab measurement of the ampere. Section THREE investigates "Kirchhoff's Current Law", which serves as a fundamental basis for circuit analysis and trouble-shooting.[9]

In dealing with the rationale for a unit in LCE, it is essential according to Jelden, that the student recognize why it is important that he understand this phase of the instruction, what relevance the unit has for him, and what benefit the student will derive from the time spent studying the packet. He suggests that it may be necessary for the teacher to verbally supplement the written statement of rationale to help unlock the student's internal drive for an essential learning experience.[10]

Behavioral Goal #1

This is a functional statement explaining what the student is to be expected to learn as it describes the conditions for the learning experience and to what degree the task is to be mastered. (The reader is referred to pp. 8A of another recent Division release on "Behavioral Objectives".)

The first Behavioral objective for Topic One in Packet No. 8, on CURRENT is

> 1. The learner will be able to define in writing "current", list its practical units of measurement, and explain the conditions necessary before electrical current will flow. (pg. 8-3)[11]

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[9]David L. Jelden, Packet #8, CURRENT, Industrial Arts Department, Colorado State College at Greeley, Colorado, p. 8-1.

[10]Jelden, op. cit., Descriptive Materials, p. 2.

[11]Jelden, op. cit., Packet #8, p. 8-2.

Student Assessment

The next step in Jelden's plan provides the learner with three choices as he makes a self-assessment of his knowledge of, and competencies with, the specified behavioral tasks: They are

Directions: Check (✓) one of the following tracks and pursue the action indicated.

(___) I understand ALL of the tasks indicated in the above objective and therefore wish to take the self-test found at the end of this section. (pg. 8-4)

(___) I understand PART of these tasks identified in the above objective and will study those with which I am unfamiliar. When completed, I will take the self-test.

(___) I understand NONE of the tasks identified in the objective and will proceed in the order recommended in this packet, beginning on the next page. When completed, I will take the self-test.[12]

The Accelerated Track

This is for the learner who checks the first choice in the "Student Assessment" form and thinks he understands ALL of the tasks indicated in the first behavioral objective. This self-test usually involves objective questions and in instances essay items. When essential, a performance or manipulative experience is specified. It will be noted, that there is provision in the plan for teacher participation in this evaluation and it is only when both the learner and the teacher are satisfied, that the student has met the minimum requirements of the objective, that the learner moves ahead on this accelerated path. The self-test for determining if the

[12]Ibid., p. 8-2.

student has the competence specified in Objective One, to pursue the accelerated route, for Packet No. 8 on CURRENT, is as follows:

8-4

TOPIC ONE

DEFINITION OF ELECTRICAL CURRENT

DIRECTIONS: This self-test is to be completed when you feel the objectives for this section have been fulfilled. Answers are to be placed on the test. Scoring will NOT affect your term grade; it is your opportunity to identify tasks which have been mastered, as well as possible deficiencies. If the score is above 80%, continue to the next topic. A score below 80% indicates additional study is required. See the instructor for assistance.

---

1. A "COULOMB" is __?__

   a. a number of electrons
   b. a rate of electron flow
   c. a unit of electrical force
   d. determined by multiplying electrons x time

2. The unit of electrical current is __?__

   a. ohm
   b. watt
   c. coulomb
   d. gauss
   e. amp

3. The unit of electrical current is most similar to __?__

   a. pounds
   b. pounds/ in^2
   c. gallons/minute
   d. cubic feet
   e. heaven knows; I don't!

4. As voltage increases, current __?__

   a. increases
   b. does not change
   c. decreases

5. As resistance increases, current ___?___

a. increases
b. does not change
c. decreases[13]

When the student, pursuing the accelerated path, finds that there are aspects of the self-test in which he is not proficient, he then is directed to report to the teacher for suggestions that he might follow in acquiring the needed competencies to move ahead. This is identified on Jelden's flow chart as Path "B", Additional Theory or Additional Application, and is undertaken only after a "satisfactory teacher evaluation".

Provision for Learning Activity

Those who check Number two, on the form for Student Assessment (understood part of the tasks) or Number three (understood none of the tasks) are referred to available media covering knowledges and skills required to meet the behavior goal. The Learning Activity Packets include:

1) A list of recommended media available where information can be obtained which will allow the learner to gain information about the task.

2) A list of helpful study-guide questions that, when answered by the student, will allow him to understand the objective or information related to it.

3) A laboratory experience, if feasible, that will give an opportunity to apply certain ideas or knowledge on a practical basis.

4) An information sheet that will summarize the basis of the task or its essential parts.[14]

To illustrate, the learning activity sheet, for Topic One, Packet No. 8 on CURRENT is as follows:

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[14]Jelden, op. cit., Descriptive Materials, p. 4.

TOPIC ONE

DEFINITION AND FUNDAMENTALS OF MEASUREMENT FOR ELECTRICAL CURRENT

RECOMMENDED MEDIA - Select any one of the following.

(___) 1. ELECTRICITY 1-5, Van Valkenburg, pp. 1-60 to 1-73, (Excellent reference and best source to fulfill Objective #1.)

(___) 2. ELECTRICITY 1-7, (Class recommended text), Mileaf, Vol. 1, pp. 57-58.

(___) 3. BASIC ELECTRICITY, NAVPERS 10086A, pp. 19-20.

(___) 4. REFERENCE #1, BASIC ELECTRICITY 1, DC FUNDAMENTALS, Loper, pp. 10-00 (Excellent reference)

(___) 5. Additional media selected by student

_____

_____

_____

_____

STUDY GUIDE QUESTIONS

OBJECTIVE #1

1. Define COULOMB: _____

ELECTRICAL CURRENT: _____

AMP: (give answer in terms of "coulomb" _____

_____

2. THOUGHT QUESTION: Review the definition of electrical current. What effect does VOLTAGE have on current flow?

3. What effect does RESISTANCE have on current flow?

4. List the practical unit of electrical current: _____ "Charge-Discharge" meters in the automobile are examples of this type of meter.[15]

[15]Jelden, op. cit., Packet No. 8, p. 8-3.

An example of "Lab Activity" (reproduced on green paper) on Ammeter Measurement for Objectives two and three[16], in Packet 8, is

OBJECTIVE #2 and #3

INTRODUCTION: The purpose of this lab exercise is to furnish you with the opportunity to measure current through use of the VOM and the 1 ma panel meter.

EQUIPMENT LISTING:

VOM	1 MA METER
VTVM	4 - 1-1/2V cells
RESISTORS:	500 ohm, 5K ohm, 10K ohm

NOTE: All resistors are brown in color, and have the ohmic value clearly marked on each.

PART I - USE OF THE V.O.M. FOR MEASURING CURRENT

Procedure:

(___) Step #1. Plug in the VTVM. Allow it time to stabilize for future use on this exercise.

(___) Step #2. Construct the circuit shown in Figure 1. The Ammeter is a lab VOM. Caution: Set the VOM to the least sensitive current range.

Power is supplied with 2-1.5 volts flashlight batteries

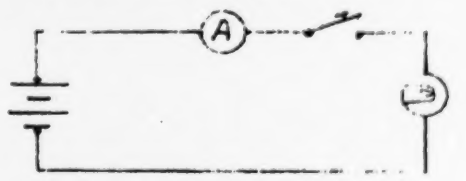


FIGURE #1

(___) Step #3. Close the switch. The lamp should glow.

(___) Step #4. Measure and record the current flow in the circuit in the space provided.

_____ma

(___) Step #5. Use the VTVM to measure the voltage across the lamp, as is shown below (FIGURE 2). Record the measurement in the space provided.

_____voits

(same power source as FIGURE #1)

[16] Jelden's five behavioral objectives for the unit on CURRENT are listed on p.

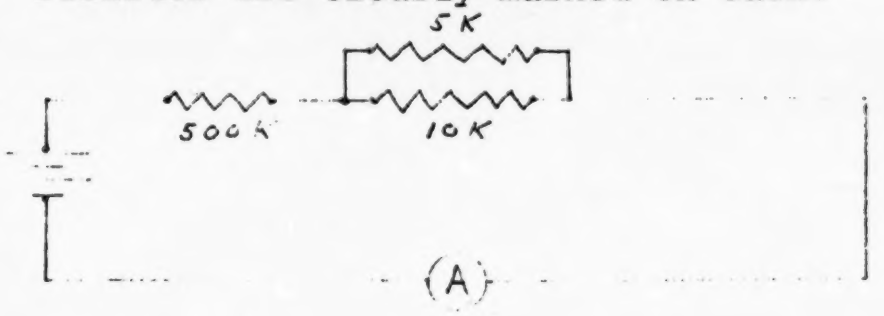
8-9

LAB (con't)

PART 2 - USE OF 1 MA METER TO MEASURE CURRENT

Procedure:

(___) Step #1. Connect the circuit shown below. Note: All resistors are large in size and located in the left drawer of each lab position. The ohmic values of each resistor are clearly marked on each.



(___) Step #2. If the circuit has been properly constructed, the ammeter should indicate approximately .90 ma. (Tolerable error: ± .1 ma)

Record the ammeter indication: _____ma

Problem: If you didn't get the proper value, give some reasons or explanation of what may be wrong.

Once the student has undertaken the learning activity he proceeds to the self-test when he believes that he can achieve the tasks specified in the behavior goal. If the student fails to meet the level of proficience specified in the objective, he is re-cycled back into suggested additional learning activity. This process is continued until the student and teacher are agreed that the knowledges and skills are sufficient to proceed to the next objective and the instruction organized to fulfill that goal.

There is provision, of course, in Jelden's system for additional in-depth study by the more able students who have the ability to

pursue the accelerated track. This additional in-depth study is possible through path "B" if the need exists.

When all of the objectives (lessons) are completed the learner and teacher schedule a comprehensive evaluation covering all of the instruction in the packets. This may take the form of an oral interview, an essay examination, a laboratory performance test or a combination of these.[17]

David L. Jelden summarizes his system of Learner Controlled Education in this manner:

> The LEARNING ACTIVITY PACKET is designed to provide the learner with a self-pacing, individualized, multi-media system of education. It frees the teacher from highly structured classroom lectures and provides the needed time to guide the learning process of the students.
>
> Most of the materials in the LEARNING ACTIVITY PACKET provide for self-study. On occasion, a teacher demonstration or lecture may be the best way to present certain kinds of information to a small group of students within the class. What the LEARNING ACTIVITY PACKET will do best is provide for the individual differences of the students and place the teacher in the professional role of being a diagnostician or prognosticator of the educational process rather than a regurgitator of factual information which a machine or some form of educational media might do better.[18]

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[17] Jelden, op. cit., Descriptive Materials, pp. 4 & 5.

[18] Ibid. p. 5.

For Discussion

1. What are the advantages of applying the techniques of industry in systems design, analysis, management, and evaluation to curriculum development and assessment in vocational and applied arts education?

2. What are the disadvantages of the systems approach to curriculum development and assessment in occupational education?

3. What is meant by mediated instruction?

4. What is meant by presentation modes in the systems approach?

5. How would you describe the role of the teacher in Jelden's "Learner-Controlled Education plan?

6. How would you go about determining what your students already know and can do before instruction that is to be focused on competencies specified in a behavioral objective?

For Further Study

Books

Periodicals

Groeschell, Robert, "Curriculum Provisions for Individual Differences." School and Society, 107, (June, 1967), pp. 416-418.

Jelden, David L., "INDIVIDUALIZED INSTRU TION: A Meaningful Eductional Experience", Journal of Michigan Industrial Education Society, Inc., XXIX, No. 4, (June, 1970), pp. 3, 10-14.

Jones, Richard, "Learning Activity Packages: An Approach to Individualized Instruction", Journal of Secondary Education, 43, (April, 1968) pp. 178-183.

Reissman, Frank, "Styles of Learning," NEA Journal, LV, (March, 1977) pp. 15-17.

Talbert, Ray L., "A Learning Activity Package, What Is It?: Educational and Audiovisual Guide 47, (January, 1968) pp. 20-21.

Tischler, Morris, "Systems Approach - Modern Technology in Skills Training," Industrial Arts and Vocational Education, 57, No. 8, (October, 1968), pp. 26-29.

MISSION:

DEVISED PROCESSES AND PROCEDURES TO DEVELOP AND EVALUATE NEW CURRICULUM MATERIALS

RESPONSE:

THE DEVELOPMENT OF BEHAVIORAL OBJECTIVES

As a part of the new organization unit for Vocational and Applied Arts Education, with its emphasis on the Systems Approach to the preparation of teachers, the staff of the Industrial Education Curriculum Area recognized the need to revise their educational strategies. A clear cut need to design relevant instruction through the matching of media and teaching strategies with the learning patterns of individuals was in evidence.

Out of this need came the work identified as Behavioral Objectives. Dr. G. Harold Silvius, Director of this study, developed and advanced the enclosed model for the development of behavioral objectives within the Industrial Education Curriculum Area.

This model provides vocational educators with procedures for identifying behavioral objectives; guidelines for developing behavioral objectives; explanation of cognitive, affective, and psychomotor domains; with parameters for the writing of behavioral objectives.

Working Copy Only
NOT FOR PUBLICATION

SUBJECT: Behavioral Objectives

FROM: G. Harold Silvius

TO: Students Enrolled in IED 6185, Course of Study Construction, and Other Interested Persons at WSU

DATE: January 18, 1971

Many educators, including those in industrial education, have been refining their courses through the medium of behavioral objectives. After the overall course aims have been established, delineating the parameters of a course (as suggested in Chapter V of the first edition of Organizing Course Materials by Silvius and Bohn) the professionals responsible for organizing course materials should then be ready to specify the performance outcomes and organize the behavioral objectives for each course. These objectives stated as measurable learning behavior at the conclusion of instruction, can become the stepping stones for the fulfillment of the overall aims (or major objectives) for the course. This end-oriented approach is the basis for the specificity needed in curriculum development that, in turn, guarantees outcomes in learner performance. It also reduces instruction to the basic essentials and is an approach for eliminating extraneous teaching content.

Such end-of-course objectives should provide:

(1) the learner with an improved perspective of his learning tasks.

(2) educators with a sound basis for planning the content, selecting methods and strategies, formulating specifications for instructional supplies and equipment, and accounting for, and evaluating, the effectiveness of instruction.

(3) a system for classification and evaluation of desired behavior (cognitive, affective, and psychomotor - discussed on pp. 10-19).

Identifying the Behavioral Objectives

Each lesson, within a unit of instruction, may be organized to satisfy one or more behavioral objectives. Some teachers organize instruction around a hierarchy characterized by something like five or six unique and major course objectives (or course aims), with each in turn broken down into enabling objectives. Each enabling objective is then sharply identified with a specific phase of the instruction, that is, in turn, planned to contribute to the overall fulfillment of one or more of the major objectives (or aims) for the course. To illustrate, the expected student outcomes for a secondary preparatory vocational program in Radio-Television Repair[1] are:

Color and Black-and-White Television

1. The student shall be able to verbally explain and/or draw an diagram which explains the manner by which an image of an object is transmitted from the sending object to the receiver. In addition the student shall be able to indicate the similarities and the differences between a black-and-white image and color image.

2. When presented with a newly purchased b/w or color receiver which is to be installed in a specific location-home or commerical-the student shall be able to determine the type of antenna (if one is needed), install the antenna, connect antenna wire to receiver, and adjust the receiver image to achieve customer acceptance.

3. Given a malfunctioning black-and-white receiver and/or a color receiver, the student shall be able to locate the malfunctioning component, repair or replace the defective component to the degree of customer acceptance.

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[1]Within Electronics as a family of occupations, Occupation Code: 17:1503 (Specialized theory and practice which are concerned with the construction, maintenance and repair of radios and television sets. Training also prepares pupils to diagnose troubles and make repairs on other electronic products such as high-fidelity sound equipment, phonographs, and tape recorders.)

4. Given a receiver which does not have a malfunction but its image is distorted by interference, the student shall be able to locate the source of interference, and modify the receiver to reduce the influence of the interference upon the image.

5. After completing a service call, the student shall be able to prepare an itemized bill for services rendered and parts repaired or replace.

Radio

1. The student shall understand how sound waves are transferred from the source, via radio waves, to the receiver. Evidence of understanding will be based upon a paper which graphically explains the process.

2. The student shall be able to identify the major components such as

   a) Cathode-ray tubes.
   b) Resistors and capacitors.
   c) Loudspeakers.
   d) Coils, chokes, transformers.
   e) Transistors, etc ----------.

   and also be able to identify radio symbols.

3. Given an AM, AM-FM automobile or another type of radio receiver which has one or more malfunction components, the student shall be able to locate the malfunctioning component, determine if the cost of repair does not exceed the value of the radio--if repair is the decision--to achieve customer satisfaction.

4. At the conclusion of the servicing, the student shall be able to prepare an itemized list of service performed and the cost of the services.

Radio - Phonograph

1. When presented with one or more of the radio-phonograph models, the student shall be able to determine the make and model number, secure the service manual, determine the source of the problem, repair the problem, and prepare an itemized bill.

Tape Recorders

1. The student shall understand the principles of

   a) Tape recording.
   b) Play back.
   c) Erase.

and the reel drives of

a) Spring belt drive.
b) Friction-clutch drive.
c) Motor-drag drive.

2. Given a specific tape recorder on which to perform routine maintenance, the student shall be able to perform the following tasks

a) Cleaning and inspection.
b) Lubrication.
c) Head demagnetization.

3. Given a specific tape recorder to repair and/or adjust, the student shall be able to perform the following

a) Mechanical tests and adjustments.
b) Electrical tests and adjustments.

to the degree that the repaired tape recorder will be accepted by its owner.

Record Changers

1. Given a record changing mechanism, the student shall be able to service the

a) Cartridge and needles.
b) Drive System.
c) Motors.
d) Change cycle.
e) Trip mechanisms.
f) Shut-off systems.
g) Record dropping systems.
h) Indexing mechanism.
i) Tone arm.

and be able to perform

a) Circuit and cycling analysis.
b) Adjustment of the items mentioned above.

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[2]Reprinted from Curriculum & Admissions Specifications for Northwestern Oakland County Vocational Education Center, Oakland Schools, 2100 Pontiac Lake Road, Pontiac, Michigan 48054 (with special permission of David H. Soule, Director, Division of Vocational Education, Oakland Schools).

The behavioral objectives, identified as an early step, in the development of each packet (unit of instruction) for Jelden's Learner Controlled Education program[3] will serve as another example. For the unit on CURRENT - Packet 8, he identified five behavioral objectives and placed them in this order:

1. The learner will be able to define "current" in writing, list its practical units of measurement, and explain the conditions necessary before electrical current will flow.

2. Given a lab VOM and milliamp meters, the learner will be able to accurately measure electrical current.

3. The learner will be able to use the VOM and lab milliamp meters in a safe manner.

4. The learner will be able to state in writing Kirchhoffs Current Law, and to illustrate its application through the diagramming of an illustrative example.

5. Given a combination of electrical components which constitute a circuit, the learner will be able to apply Kirchhoffs Current Law in analyzing current flow throughout the entire circuit.

After the enabling or minor behavioral objectives, stated in observable performance terms, are identified and formulated, the curriculum builder(s) working from a task analysis of the subject area, ascertain what instruction is essential for a unit. For example, the unit on CURRENT, for the basic college course in electronics was organized by Jelden as three topics.

> Topic One, "Definition of Electrical Current" was designed to fulfill the first of the five behavioral objectives for Packet 8.
>
> The instruction for the second and third of Jelden's five behavioral objectives, for the unit on CURRENT in Packet 8, are fulfilled through instruction organized for Topic Two, "Measurement of Current with VOM and Lab Milliamp Meters".

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[3]David L. Jelden of Colorado State College has employed the systems approach in teaching Electronics; he calls his system "Learner Controlled Education" and has the instruction for industrial arts teachers organized in twenty "packets" (major units).

Topic Three, "Kirchhoffs Current Law" was organized for the fulfillment[4] of behavioral objectives 4 and 5 (as listed on p.5).

Stating Behavioral Objectives

It is imperative that each enabling behavioral objective, that is later identified with some specific unit of instruction, be defined to describe the specific behavior to be demonstrated by the learner as he concludes the instruction organized for the topic. This is the contrast to the overall aims (or major objectives) for the course which are stated in more general terms as they delineate the parameters for instruction. The enabling behavioral objectives are stated, then, in terms of what the learner should be able to do and know after instruction. Often the introductory phase of a behavioral objective specifies what is given to the learner so that he may proceed to meet the conditions, after instruction specified for that particular behavioral objective. For example (conditions underlined):

> Given several resistors to be connected in parallel, a power supply, voltmer, and VOM, and an ohmmeter, the learner will, with the aid of the meters:
>
> a) find the resistance of each resistor and the total resistance of the circuit.
> b) find the voltage at any point in the circuit.
> c) find the current through each resistor and the total current.[5]

---

[4]Instruction for each of the three Topics (or lessons) includes the self-assessment form to identify a track to be persued, a self-test to determine competency with objective(s), recommended media, study guide questions, and lab exercises for application.

[5]Behavioral Objective No. 2 from packet number 11, on PARALLEL CIRCUITS, Electronics course at Colorado State College, Greeley, Colorado.

> Given a test of aptitudes from the General Aptitude Test Battery (GATB), the student will be able to identify his[6] (her) three highest aptitudes measured by the test.
>
> Given Cochran's book[7], Innovative Programs in Industrial Education, each of the twenty-four Fellows will select one program described, write to the director of that program for further information, and prepare a duplicated report describing that program for the other Fellows. This report is to be typed, double spaced, and reproduced in a clearly legible manner. It should be between five and ten pages in length. The report will contain the following subdivisions: a brief description of the program; an analysis of this program to the curriculum being developed by the Experienced Teacher Fellowship Program. This comparison should include the philosophical foundation, program goals, methods used to reach these goals, completeness of material developed, and an affective response on the part of the Fellow as to the comparative worth of each program.[8]

Robert J. Janeczko has observed that the format for measurable instructional objectives varies with the skill and ingenuity of teachers. In his examples taken from a course in power mechanics, the statements consider 1) tasks, 2) conditions, and 3) performance criteria. For example:

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[6]The third behavioral objective from the materials organized as the INTRODUCTION, Packet O, to Jelden's Learner Controlled Education program in Electronics. Dr. David L. Jelden schedules students in his Electronics program at Colorado State College for the GATB and the Edwards Personal Preference Scale to determine aptitude for participation in self-pacing instruction for individual development.

[7]Leslie H. Cochran (Bloomington, Illinois: McKnight & McKnight Publishing Company, 1970), Pp. VIV + 114.

[8]Behavioral Objective two describing a terminal performance for each Fellow in the 1969-70 ExTFP at Wayne State University. The terminal performance objectives were written by Harold S. Resnick as he served as professor for this program in Curriculum Development.

Task 2: Given a list of five technical magazine articles, the student will select two and analyze their content in writing.

Conditions: Time: one week, outside of class, type written, double spaced, not more than two pages each in length.

Criterion: Identify the author's major purpose, at least two subordinate themes and explain their relationship to the central purpose and the author's conclusions.

Task 3: Given a four cycle gasoline internal combustion engine with a pulse-jet carburetor, properly adjust the carburetor with a hydraulic dynamometer.

Conditions: Idle speed: 1000 $\pm$ 50
Vacuum: 18" @ idle $\pm$ 1"
Load: 7.5 # @ 3500 rpm $\pm$ .5#
Fuel consumption: 9#/hr. @ 3500 rpm $\pm$ .5#.

Criterion: Time: twenty minutes, use of all manufacturer's references; tolerances (75°, Atm press. 14.7, 36% RH) $\pm$ 5%.[9]

Experienced teachers recognize that no two learners will perform the same task with equal proficiency. This is most apparent where tools are used to shape and form materials for skill development. Rate and proficiency are, therefore, variables that may be significant factors in student compliance with end-of-course objectives. In considering these issues, David S. Bushnell suggest that there be

> . . . appropriately classified performance objectives that would describe with precision the minimal levels of performance that each trainee should be able to achieve. This does not ignore the fact that such trainees could go well beyond the minimally sufficient level. However, it [a catalog of appropriately classified performance objectives] would describe the adaptive, functional, and specific content skills needed to qualify for a given occupation.[10]

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[9]Robert J. Janeczko, "Behavioral Objectives or Objections, Journal of Industrial Teacher Education, Vol. 7, No. 5 (Summer 1970), p. 48.

[10]David S. Bushnell, "A Systems Approach to Curriculum Improvement", paper included in a Report of a Seminar on Process and Techniques of Vocational Curriculum Development, Research Coordinating Unit for Vocational Education, University of Minnesota, Minneapolis, Minnesota 55455 (April, 1970), p. 14.

Teachers about to write behavioral objectives for a course will note that the examples in this release may

1. mention "the student", "learner", or "you" (when the pronoun of the second person is used) in the introductory part of the statement. This is done to make it clear that the student is to assume responsibility for the specified behavior to be acquired. This is in contrast to something to be performed (or taught) by the teacher. It will be noted that some teachers simply by-pass the words "student", "learner", or "you" in their objectives. They simply expect this to be understood.

2. describe the (task) behavior to be mastered by the learner. This is introduced with a verb that describes observable action and the results to be evaluated and possibly demonstrated.

3. define the conditions covering restrictions and limitations (such as time limits) to be placed on the learner and the kind and specifications for instructional materials to facilitate the activity.

4. define the standards to be met with criteria for acceptable performance (i.e. the degree of skill to be met in the performance of a task such as a hand or machine tool operation, unless perfection is implicit).

Student Involvement with Life Learning Styles

It now seems imperative that students in school be placed in a setting where they could start using and acquire life-long learning skills. Such an attitude and approach might well be acquired where it is possible for learners to assume more and more responsibility for extending their educational experiences. It will only be through such an approach that persons now in school will acquire the needed learning skills for keeping abreast of the expanding knowledge that comes with technological advance. This is the reason why some teachers have worded these statements in the second person, to make these behavioral objectives more personal and directly the responsibility of the individual student. This is done by using the pronoun "you" (second person) rather than "learner" (third person) as illustrated in the following example.

> Given the frequency of an AC circuit, you will be able to orally or in writing state:
>
> a) how many times the voltage reaches a maximum;
> b) how many times the voltage reaches a positive maximum;
> c) how many times the voltage reaches a negative maximum;
> d) how many times the current changes direction.[11]

Placing the student in a setting where he is expected to assume more and more responsibility for his own destiny is one of the major reasons why educators are employing in modern schools, a flexible modular schedule (FMS).[12] In many schools now on FMS, throughout the United States, a learner is expected to intelligently plan for, and use, about 50 percent of his time for activities that contribute to individual development. This is done through the fulfillment of educational goals established and accepted by the learner.

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[11] Objective 3 from Jelden's Packet 13 on ALTERNATING CURRENT.

[12] A rather extensive treatment of FMS, especially as it is applied in industrial education, may be found in G. Harold Silvius and Estell H. Curry, Managing Multiple Activities in Industrial Education, second edition. (Bloomington, Illinois: McKnight & McKnight Publishing Company, 1971) pp. 512 - 519.

The Cognitive, Affective, and Psychomotor Domains[13]

Desired behavior may be classified as Cognative, Affective, or Psychomotor learning. These classifications should be helpful as professionals undertake to plan relevant instruction by matching media and teaching strategies with the learning patterns of an individual.

In brief, each behavioral objective can be classified as contributing to the informational (cognative), attitudinal (affective), or motor skills (psychomotor) processes of the learner. These factors which influence mental, physical, and intellectual development need to be considered: (1) as instruction is planned for the fulfillment of the aims or the roles specified for instruction,

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[13]Industrial Education students or teachers are referred to these publications which deal with the taxonomies of educational objectives in each of the three domains, now generally accepted and discussed by educators:

Benjamin S. Bloom (ed), Taxonomy of Education Objectives, Handbook I: Cognitive Domain (New York: David McKay Company, Inc., 1956), Pp. vii + 207.

David R. Krathwohl, et. al., Taxonomy of Educational Objectives, Handbook II: Affective Domain (New York: David McKay Company Inc., 1964), Pp. ix + 196.

Elizabeth J. Simpson, Schema for Classification of Educational Objectives, Psychomotor Domain, (Washington: Department of HEW, Instructional Materials and Practices Branch, Office of Education, 1970 - (xeroxed) Pp. 5 and The Classification of Educational Objectives, Psychomotor Domain Urbana, Illinois, 1970) Pp. 30 (Reprinted from Vol. X, No. 4 Winter 1966-67, Illinois Teacher of Home Economics, University of Illinois, Urbana-Champaign, an abstract of research carried on under Vocational and Technical Grant Contract No. OE 5-85-104, July 1, 1965 - May 31, 1966.]

(2) as the content for instruction is organized, (3) as methods and teaching aids are selected, (4) as the organization is planned, (5) as appropriate evaluation approaches and instruments are developed and used, and as (6) plans are made for needed and appropriate physical facilities.

The Behavioral Domains

COGNITIVE -- refers to the mental and intellectual development that encompasses knowledge, comprehension, application, analysis, synthesis, and evaluation.[14] These objectives classified as "Cognitive" deal with the recall or recognition of knowledge and the development of intellectual abilities and skills. This is the domain in which most curriculum work has taken place with objectives phrased as student behavior.[15] Examples in industrial education would be the acquisition of technical information (essential to form judgments on the job), general information (nice to know) and guidance information (personal, educational, and occupational).[16]

AFFECTIVE -- includes behavior that centers around the attitudes, emotions, and values of the learner, that is reflected in the interests, appreciations, and adjustments of the learner.

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[14]Benjamin S. Bloom (ed), Taxonomy of Educational Objectives, Handbook II: Cognitive Domain (mentioned in footnote 13), Pp. 201-207.

[15]Ibid., p.7.

[16]Verne C. Fryklund, Occupational Analysis: Techniques and Procedures, Fifth Edition, (New York: The Bruce Publishing Company, 1970), Pp. 70-711.

The objectives classified as "Affective" would describe desired changes in interests, attitudes, and values, and the development of appreciations and adequate adjustment.[17] Examples in industrial education would be the student's attitudes toward 1) the safety precautions, 2) absenteeism, and 3) care of tools and equipment in the laboratory; and his appreciation of craftsmanship.

PSYCHOMOTOR -- refers to the teaching of motor abilities and the degree of skill involved in carrying out a motor activity. The factors involve neuromuscular coordination and the development of skillfulness in the learner.[18] An example is the degree of skill development (such as "understanding", "use", or "occupational" level)[19] that comes from meaningful repetition of a basic tool or machine tool operation at the work station in industrial or technical education. Skill denotes that some learning has taken place, and thus, the psychomotor objectives should be stated in terms of abilities and skills to be acquired by the learner.[20]

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[17]David R. Krathwohl, et. al., Taxonomy of Educational Objectives, Handbook II: Affective Domain (mentioned in footnote 13), pp. 24-44.

[18]These variables for the Psychomotor Domain are reported in a paper by David L. Jelden of Colorado State College, entitled "A Practical Approach to Individualized Instruction", p. 4.

[19]At the point that a learner has initially performed an operation he would have little more than an "understanding" of the motor activity; after performing this same operation a few times, under meaningful instructional supervision, it is possible to bring the proficiency to a practical "use" level that would compare with that demonstrated by the home craftsman; and through continued instruction and practice it is possible to bring the degree of skill in doing an operation to an "occupational" level where the rate and proficiency of performance is commensurate with industrial standards, and with the steps performed automatically.

[20]Several factors in these statements that relate to skill development, through motor activity, were identified in the "Review of the Literature," pp. 121-126, reported in the study by Elizabeth Jane Simpson on The Classification of Educational Objectives, Psychomotor Domain, previously cited in footnote 13.

Writing Behavioral Objectives

A study of any listing of behavioral objectives will quickly reveal that the cognitive outcomes are easy to formulate, program for the desired outcomes, and to objectively evaluate in terms of student growth and development. Teachers can readily see how this would be as they examine typical behavior that would classify in the Major Categories of the Cognitive Domain.[21]

1. Knowledge -- involves remembering previously learned material such as recalling a structure, pattern, or setting. For measurement purposes it means little more than bringing to mind essential information from one's total bank of knowledge. It represents the lowest level of cognative learning in this classification.[22]

2. Comprehension -- is where the individual understands what is being communicated, can make use of the idea or material without necessarily relating it to other applications, or seeing its fullest implications. Examples are translating fractions to decimals, estimating costs, and predicting trends and effects. Comprehension represents the lowest level of understanding.

3. Application -- is a higher level of understanding than comprehension. It is concerned with ability to make an application of principles, laws, safety precautions, methods, theories, and procedures.

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[21]A more complete description and breakdown of these Major Categories is given in Benjamin S. Bloom (ed), Taxonomy of Educational Objectives: Handbook 1: Cognitive Domain, op. cit. pp. 201 - 207.

[22]Helpful illustrative examples of general instructional objectives and specific learning outcomes for each of the categories in the Cognitive Domain may be found in: Norman E. Gronlund, Stating Behavioral Objectives for Classroom Instruction (New York: The MacMillan Company, 1970), pp. 20 - 21.

4. Analysis -- is the ability to identify the elements so an organizational structure is understood. Examples of such behavior are 1) to recognize unstated assumptions, 2) ability to identify kinds of materials used in the construction of a project, 3) ability to recognize the kind of three dimensional method used in a pictorial rendering, and 4) ability to diagnose the trouble in a malfunctioning engine. It is a higher level of learning than comprehension and application.

5. Synthesis -- is ability to put the parts or elements together, or make an application or proposal, in a way that a plan, project, or rendering is developed or created. It includes the communication process of the writer or speaker as he conveys to others his ideas, feelings, and/or experiences. It includes skill in writing (excellent organization of ideas and statements), ability to tell a personal experience effectively, plan a procedure for an experiment or project, and propose an approach for testing a hypothesis.

6. Evaluation -- is making value judgments (both quantitative and qualitative) against internal or external criteria. It would include criterion-referenced measurement (where an individual is compared with some established criterion rather than against other individuals) or norm-referenced measurement (where an individual's performance is evaluated against a normative group). Evaluation is the highest level of learning in the cognitive hierarchy and employs elements from the other major factors in this classification.

The Affective Domain poses quite a different problem. An examination of the major variables in the affective classification reveals that it is much more difficult to plan behavioral objectives that might be objectively measured and which would contribute, with assurance, to the growth and development of the learner. The Major Categories in the Affective Domain[23] are:

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[23]A more complete description and breakdown of these Major Categories is given in David R. Krathwohl, et. al., Taxonomy of Educational Objectives, Handbook II: Affective Domain, op. cit., pp. 116 - 185.

1. Receiving -- is the learner's willingness to respond to stimuli and receive selected phenomena such as course goals, content, and activities or some subject area in general. Previous experience of the student brings to each situation a point of view or set which may facilitate or hinder the objective. The goal is to secure, direct, and hold the learner's participation. Examples of objectives in this classification would be 1) listen attentively to all basic instruction, and 2) give careful attention to responsibilities as a student officer. This is the lowest level of learning in the Affective Domain.[24]

2. Responding -- is the level above that of merely attending to phenomenon. The student becomes involved and is committed to the activity at hand. While this category is at the lowest level of commitment, the learner expresses a value by receiving and displaying a wholesome attitude toward the subject phenomenon, or activity. Examples would be 1) willingness to serve in a leadership role in the student-directed organization, 2) obeys the safety precautions with much consideration, and 3) finds pleasure in working in the home workshop.

3. Valuing -- is behavior categorized at a level that is sufficiently consistent and stable to be characterized as a belief or an attitude. The learner recognizes the thing, phenomenon, or behavior as having worth in value or assessment judgments as he displays attitudes and expresses appreciations. Belief at this level involves a high degree of certainty. Examples would be 1) appreciates good craftsmanship, and 2) demonstrates much ability to shape and form materials with tools and machines.

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[24]Helpful illustrative examples of general instructional objectives and specific learning outcomes for each of the Categories in the Affective Domain may be found in Stating Behavioral Objectives For Classroom Instruction, cited in footnote 22, pp. 22 - 23.

4. Organization -- is the bringing together of different values, evaluating them, and assimilating them in a value system that is subject to change as new values are considered. Conceptualization is the first subdivision in the organization process, which permits the individual to see how a value relates to those he already holds. The organization of a value system is second. An example of a value system would be to formulate and accept a life plan for career development.

5. Characterization by a Value or Value Complex -- is the highest level of learning in the Affective Domain. It consists of the individual's value hierarchy, organized as an internally consistent system that controls behavior so that a person acts consistently and does not display emotion or affect when threatened or challenged. Affected Behavior at this level becomes a "life-style" as it becomes predictable and is consistent. Often, an unconscious set guides action without conscious forethought. Thus, behavior relating to attitudes, behaviors, beliefs, and ideas become consistent with the individual's internal value system.

Persons serving on advisory councils, and other leaders, are now raising many issues that relate to the Affective Domain, in the expanding role for a broadbase occupational education program To illustrate, in the Report of the 1970 Minnesota Seminar on Vocational Curriculum Development, Moss and Smith point out that

> ...the technical tasks of the work role involving cognitive and psychomotor skill performance are typically considered relevant by all vocational educators. But what about the affective behaviors that are involved in occupational adjustment and human relations tasks on the job? Are these to be identified as work tasks to be taught [and built into the behavioral objectives]? The same issue can be extended; what kinds of tasks inherent in the citizenship and culture-carrying roles are to be included among the tasks to be taught in vocational curriculums?[25]

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[25]Jerome Moss, Jr. and Brandon B. Smith, "Summary of the Discussion," Processes and Techniques of Vocational Curriculum Development, Report of a Seminar, Minnesota Research Coordinating Unit for Vocational Education, (April, 1970), p.3.

At this Minnesota Seminar

> It was proposed that these behaviors are simply another type of "task," and may, therefore, be treated after identification in the same way as other tasks. The immediate difficulty seems to be that we currently lack adequate methods, instruments, and/or observation skills to reliably identify affective tasks and to specify the level of performance required f each.[26]

Behavior which result in changes in interest, attitudes, and values and the development of appreciations and adequate adjustments is concerned with the humane outcomes of education and is not readily qualifiable in the computer-dominated school. Perhaps this is then one of the greatest deterrents to the systems approach, where there may be a high priority on qualifiable scores for accountability, since the growth factor can not be so objectively measured as in the cognitive and psychomotor classifications. Behavior in the Affective Domain, at least for the forseeable future, will need to be evaluated through subjective judgment. Currently it is accomplished as professionals and learners employ rating scales, inventories, or check lists.

The goodness of most industrial and technical courses is predicated on the learning styles that are inherent with an activity based program. There is then much opportunity for degrees of skill development through the Psychomotor Domain, as learners use tools and machines in a "learn by doing" setting.

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[26] Ibid., p. 4.

	Variable	
Psychomotor Behavior	Frequency	The planned repetition of a hand or machine tool operation for a desired degree of skill development
	Energy	Steadiness, strength, and speed influence precision in doing the task.
	Duration	The length of time at the work-station for skill development

Such variables as rate at which an individual performs a skill, amount of strength or power needed to do a manipulative task, and the length of time that the learner remains doing a tool or machine operation are paramount in such development. Fine motor acts are performed by small muscles, especially the fingers, hand, and forearm and frequently involve eye-hand coordination. Gross motor skills involve the large muscle group of the body, especially shoulders, trunk, and legs.

The Major Categories in the classification of educational objectives in the Psychomotor Domain[27] are:

1. Perception -- is the process of becoming aware of objects, qualities, or relations by way of sense organs. Preception is essential before there can be purposeful motor activity.

2. Set (Readiness for Action or Experience) -- is the mental set (such as knowledge of steps to perform an operation), physical set (positioning of hands and body for a manipulative task), and emotional set (desire to perform a hand or machine tool operation).

3. Guided Response (directed by a person who has acquired the level of skill to be attained by learner) -- is the skillfulness attained through imitation and continual correction of errors.

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[27]Simpson, "Schema For Classification of Education Objectives, Psychomotor Domain", op. cit., pp. 5.

4. Mechanism -- is the attainment of skill sufficient to perform the initial task such as ability to do a machine tool operation. Speed, strength, and steadiness of precision are variables to be considered in the attainment of this goal.

5. Complex Overt Response -- is attained through directed and meaningful repetition of desired skill until learner is no longer uncertain about any of the steps and the performance of motor skill becomes automatic. Such attainment is represented in manipulative operations performed by highly skilled craftsmen and technicians. The motor activity includes all specific and generalized movements involved in motor coordination. Acceptable performance implies progress in improved motor coordination and is done with ease and muscle control.

6. Adaptation -- is altering motor activities to meet the demands of new problematic situations requiring a physical response.

7. Organization -- is creating new motor acts or ways of manipulating materials out of understandings, abilities, and skills developed in the psychomotor area.

Why Performance Objectives

1. The systems approach to curriculum design is predicated on having the objectives for the program stated in terms of output specifications.

2. No longer can educators base curriculum reform and improvement on what someone thinks is the effect of practice on what is hoped to be the result. Measurable performance objectives are essential to systematic program revision.

3. There is need to validate the effectiveness of public education as it prepares young people to cope with social and economic conditions to be faced in the world of work. Without identified behavioral attainment there is little basis for relating on the job success or failure to school experience.

4. There is a need to assess the cost-effectiveness of educational programs. Without the tangible evidence that comes with precisely stated goals such evaluation is virtually not possible.

5. Carefully sequenced performance objectives and outcomes are needed to insure opportunity for individual progress and development.[28]

For Discussion

1. Why do so many educators now believe that it is imperative to organize instruction to fulfil specific behavioral objectives?

2. What distinction is made between a "major" and "minor" (or enabling) instructional objective?

3. What factors are essential and need to be considered in the format of behavioral objectives for your area of specialization?

4. Describe what is meant by a flexible modular schedule now used in many U.S. schools. What are the major types of instruction employed in the plan for a FMS?

5. Define the type of behavior that is identified with:

   a) the Cognitive Domain.

   b) the Affective Domain.

   c) the Psychomotor Domain.

6. Cite an example of a behavioral objective for a course that you are (or hope to be) qualified to teach that would be classified in:

   a) the Cognitive Domain.

   b) the Affective Domain.

   c) the Psychomotor Domain.

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[28]These reasons for performance objectives were extracted from several paragraphs in a paper by David S. Bushnell, op. cit., "A Systems Approach to Curriculum Improvement", pp. 13 - 14.

7. Why has it been especially difficult to access learning outcomes in the Affective Domain?

8. Often it is difficult for a teacher to sharply classify a stated objective in one of the three major classifications. Why has this been so?

9. What is the basic difference between "criterion-referenced" and "norm-referenced" evaluation of learning outcomes?

For Further Study

BOOKS

Armstrong, Robert J. et. al. The Development and Evaluation of Behavioral Objectives. Worthington, Ohio: Charles A. Jones Publishing Company, 1970, Pp. x + 99.

Gronlund, Norman E. Stating Behavioral Objectives For Classroom Instruction. New York: The Macmillan Company, 1970, Pp. vi + 58.

Hough, John B. and Duncan, James K. Teaching: Description and Analysis. Reading, Massachusetts: Addison-Wesley Publishing Company, 1970, Pp. xv + 445.

Kapfer, Miriam B. Behavioral Objectives in Curriculum Development, Selected Readings and Bibliography. Englewood Cliffs, New Jersey: Educational Technology Publications, Inc., 1971, viii + 400.

Kibler, Robert J., Baker, Larry L., and Miles, David T. Behavioral Objectives and Instruction. Boston: Allyn and Bacon, Inc., 1970, Pp. x + 196.

Mager, Robert F. Preparing Instruction Objectives. Palo Alto, California: Fearon Publishers, 1962, Pp. x + 60.

Mager, Robert F., and Beach Jr., Kenneth M. Developing Vocational Instruction. Palo Alto, California: Fearon Publishers, 1967, Pp. x + 84.

PERIODICALS

Bortz, Richard. "Studying the Behavior of Materials," Industrial Arts & Vocational Education, Vol. 59, No. 7 (October, 1970), pp. 25-26. (Illustrates and explains "Performance Conditions," "Terminal Behavior," and "Evaluation Criteria," for each Performance Objective under a Major Objective.)

Ebel, Robert L. "Behavioral Objectives: A Close Look," Phi Delta Kappa, Vol. LII, No. 3 (November, 1970), pp. 171-173. (Deals with the limited value of behavioral objectives.)

Janeczko, Robert J. "Behavioral Objectives or Objections," Journal of Industrial Teacher Education, Vol. 7, No. 5 (Summer, 1970) pp. 47-50. (Techniques for assisting the learner with attainment of an improved perspective of learning task.)

Millman, Jason. "Reporting Student Progress: A Case for a Criterion-Referenced Marking System," Phi Delta Kappan, Vol. LII, No. 4 (December, 1970), pp. 226-227. (Illustrates difference between norm-referenced and criterion-referenced measurement and grading.)

Popham, James W. "The Instructional Objectives Ex Change: New Support for Criterion-Referenced Instruction," Phi Delta Kappan, Vol. LII, No. 3 (November, 1970), pp. 174-175 (The plan at the UCLA Center for the national exchange, between school systems, of behaviorally stated objectives for criterion-referenced instruction.)

Smith, Harry T. "Bridging the Grading Gap," School Shop, Vol. XXX, No. 5 (Jan., 1971), pp. 50-51. (Explains how non cognative, affective, and psychomotor domains are considered in a marking system for industrial arts education.)

MISSION:

DEVELOP AND EVALUATE EFFECTIVE INSERVICE TEACHER EDUCATION PROGRAMS TO UPDATE TECHNICAL AND PROFESSIONAL TEACHING COMPETENCY

RESPONSE:

DIAL ACCESS INFORMATION RETRIEVAL SYSTEM

The Industrial Education staff, in an attempt to update professional teaching competency, devised a system utilizing the Wayne State University Dial Access Information Retrieval System (DAIRS). Audio-video tapes made during presentaitons to Fellows in the Experienced Teacher Fellowship Program were recorded into the Dial Access System. These tapes were made by leaders in the field and were concerned with curriculum trends, innovative programs, legislation, professional organizations, and research.

Some of the innovative programs found among the tapes include:

The American Industry Project

The Industrial Arts Curriculum Project

The Functions of Industry

The Orchestrated Systems Approach

The Maine State Plan

The Maryland Plan

WAYNE STATE UNIVERSITY

Guild News

A Publication of the Industrial Education Guild
Division of Vocational and Applied Arts Education

COLLEGE OF EDUCATION

Volume 18, No. 2, Special Issue | May, 1971 | Graduate Editors: Neil S. Levine, R. Terry Messenger

TAPED PRESENTATIONS OF NATIONAL LEADERS THROUGH WSU DIAL ACCESS SYSTEM

During the years, 1967 through 1970, leaders in industrial education were invited from many areas of the United States to the Wayne State Campus. While in Detroit they made presentations to the Fellows in the Experienced Teacher Fellowship Program and to members and guests of the Industrial Education Guild. Their subjects were concerned with professional organizations, curriculum, trends, innovative programs, and legislation related to industrial education. In most instances these presentations were recorded with the objective of making this information available to interested students.

The industrial education staff has worked out a plan to use the WSU Dial Access Information Retrieval System (DAIRS) to make selected tapes available on a quarterly basis at the WSU Instructional Materials Center.

The Dial Access Information Retrieval System is available for retrieving the listed tapes at various locations on the Wayne campus. Remote locations such as the second floor of State Hall, first floor of the General Library, first floor of Science Hall, the first floor of the Prentis Building, and room six of Old Main, have learning carrels which can be used to retrieve audio information. To use the system, students need to locate a carrel, select the desired tape according to the assigned number listed in the directory available in each carrel, dial this number, and listen with the earphones provided. The DAIRS may be used during those hours when the buildings are open for student use. Questions or problems concerning the use of the system can be resolved by contacting the Learning Resource Laboratory located at 5454 Cass Avenue, Detroit, Michigan 48202.

Due to heavy demands by many departments for program insertion on the Dial Access System, tapes which best meet the needs of current students in industrial education classes will be selected and made available for that quarter. Quarterly releases may be issued to inform staff and students of those tapes that will be scheduled on a weekly rotation basis.

Some of the innovative programs found among these tapes include:

The American Industry Project
The Industrial Arts Curriculum Project
Functions of Industry
The Orchestrated System Approach to Industrial Education
The Main State Plan
The Maryland Plan

The available tapes, listed on following pages, have been grouped into categories by subject: A) Innovative Programs, B) Research, C) Curriculum Trends, D) Legislation, and E) Professional Organizations.

Mr. Alvin C. Clark compiled this listing of tapes and arranged to have the tapes made available through the WSU Dial Access System to fulfill the requirements of a Special Project under the direction of Dr. G. Harold Silvius.

A. INNOVATIVE PROGRAMS

1. AMERICAN INDUSTRY PROJECT

   Dr. Herbert A. Anderson, Dean, School of Applied Science and Technology, Stout State University, Menomonie, Wisconsin, 1970.

2. THE RICHMOND PLAN

   Dr. George Champion, Director for the Center for Technological Education, San Francisco State College, 1969.

3. AMERICAN INDUSTRY PROJECT

   Dr. Eugene R. F. Flug, Professor, Stout State University, Menomonie, Wisconsin, 1968.

4. THE GEORGIA PLAN (a two track industrial arts program)

   Dr. Donald F. Hackett, Chairman, Industrial Technology Division, Georgia Southern College, Statesboro, Georgia, 1969.

5. THE MARYLAND PLAN

   Dr. Donald Maley, Chairman, Industrial Education Department, University of Maryland, 1968.

6. IMPLEMENTING THE GALAXY PLAN

   Kenneth R. McLea, when Chairman, Department of Industrial Education, Mission High School, San Francisco, 1969.

7. THE MAIN PLAN

   Dr. John Mitchell, Chairman, Department of Industrial Education and Technology, Gorham State College of the University of Maine, 1968.

8. THE INDUSTRIAL ARTS CURRICULUM PROJECT (junior high school program)

   Dr. Willis E. Ray, The Ohio State University, 1970.

9. THE ORCHESTRATED SYSTEMS APPROACH TO INDUSTRIAL EDUCATION

   Dr. Lewis W. Yoho, Dean, Indiana State University, Terre Haute, Indiana, 1968.

B. RESEARCH

1. A SYNTHESIS OF RESEARCH IN INDUSTRIAL ARTS EDUCATION

   Dr. Daniel L. Householder, Chairman of the Industrial Arts Section, Department of Industrial Education School of Technology, Purdue University, Lafayette, Indiana, 1970.

2. CONTENTS OF AVA GUIDE TO IMPROVING INSTRUCTION IN INDUSTRIAL ARTS

   Dr. Ernest L. Minelli, Chairman of the Department of Industrial Education and Technology, Central Michigan University, Mount Pleasant, Michigan, 1969.

3. RESEARCH IN OCCUPATIONAL EDUCATION SINCE 1962 (significant trends)

   Dr. Jerome Moss, Jr., Professor and Co-Director of the Research Coordinating Unit for Vocational Education, University of Minnesota, 1968.

C. CURRICULUM TRENDS

1. INDUSTRIAL EDUCATION CURRICULUM AND THE PROCESS OF CHANGE

   Dr. Ralph C. Bohn, Dean of Instructional Services and Professor of Industrial Studies, San Jose State College, California, 1968.

2. USING THE COMPUTER TO FACILITATE CURRICULUM DEVELOPMENT IN OCCUPATIONAL EDUCATION

   Conan E. Fisher Jr., Director of the Division of Mechanical Technology, Macomb County Community College, Warren, Michigan, 1970.

3. ENERGY AND PROPULSION SYSTEMS

   Dr. Joseph W. Duffy, Director Central Connecticut State College, New Britain, Connecticut, 1968.

4. PANEL – DR. C. NELSON GROTE; DR. G. HAROLD SILVIUS; DR. HAROLD S. RESNICK

   QUESTIONS AND ANSWERS REGARDING INDUSTRIAL ARTS, VOCATIONAL EDUCATION, AND TECHNICAL EDUCATION

5. NATIONAL TRENDS AND FORCES THAT AFFECT INDUSTRIAL EDUCATION

   James T. Sadlier, graduate student, Wayne State University, Detroit, Michigan, 1971.

6. WHAT ABOUT INDUSTRIAL ARTS FOR THE ELEMENTARY SCHOOL? (developed by AIAA)

   Elizabeth Hunt, when Director of Technology for Children Project with The New Jersey State Department of Education.

7. NEED FOR CHANGE IN MODERN VOCATIONAL EDUCATION

   William R. Mason, when Director of Technical Vocational Education for city of Cleveland, Ohio, 1969.

8. INDUSTRIAL MATERIALS IN INDUSTRIAL EDUCATION

   Professor Louie Melo, San Jose State College, San Jose, California, 1968.

9. INDUSTRIAL ARTS, RELEVANCE, AND THE COMPREHENSIVE HIGH SCHOOL

   Dr. Carl J. Shaeffer, Chairman of Department of Vocational Education, Rutgers University, New Brunswick, New Jersey, 1969.

10. INDUSTRIAL ARTS TEACHER EDUCATION IN WASHINGTON, D. C. (a proposed project to be carried on between the Washington Public Schools, Washington Technical Institute, and New York University, using the career ladder approach)

    Sol Silverman, Director of Industrial Arts, Washington, D. C., 1970.

11. A METHOD OF TEACHING, THE CONCEPTUAL APPROACH

    Morris Tischler, Vice-President, Electronics Aids, Inc., 1970.

D. LEGISLATION

1. CHANGING PICTURE OF VOCATIONAL EDUCATION

   Dr. Jack Michie, when Director of Special Projects at Laney College and member of the President's National Advisory Council on Vocational Education, 1969.

E. PROFESSIONAL ORGANIZATIONS

1. AIAA ASSOCIATION, ROLE AND STRUCTURE

Dr. George H. Ditlow, Director of Industrial Arts, Millersville State College, Pennsylvania, when President of American Industrial Arts Association, 1970.

2. PROGRAM IMPROVEMENT, (RELATED LEGISLATION AND CLASSROOM TEACHER INVOLVEMENT WITH AVA)

Dr. Rutherford E. Lockette, University of Michigan, when he was at Trenton State College, Trenton, New Jersey, and as he serves as Vice President of the American Vocational Association, 1970.

MISSION:

DEVELOP AND CONTINUOUSLY REDESIGN PRESERVICE TEACHER EDUCATION PROGRAMS TO PREPARE PERSONNEL FOR VOCATIONAL AND APPLIED ARTS EDUCATION

RESPONSE:

TRADE COMPETENCY EXAMINATION

The Industrial Education Curriculum Area in response to the need for the validation of trade experience for college credit assembled a series of trade competency examinations. Students planning to teach one of the vocational options in the senior high school, area vocational high school, or community college must satisfactorily complete an examination as evidence of trade competency. The level of competency expected assumes wage earning experience in the occupation.

A total of 45 credit hours, which satisfies degree and certification requirements in the teaching major, may be granted for satisfactory performance on the trade competency examination. The trade competency examination includes both the theoretical and practical requirements of the trade.

As evidenced in the attached materials a tentative procedure for the administration of the trade competency examinations has been established and a report of the examinations given.

During the Spring Quarter, 1971, fifty-seven trade competency examinations were given. Of these, seven were used as originally developed; two received minor revision; two received major revision; and two new examinations in Commercial Foods and Hydraulics were prepared.

Two trade competency examinations in the Pipe Fitter and Tailoring subject areas are in the developmental stages. Seven examinations are being projected for preparation in the coming year:

Auto Body Repair

Cabinet Maker

Carpenter

Industrial Electrician

Refrigeration Mechanic

Sheet Metal Worker

Television Repair Mechanic

ADMINISTRATION OF COMPETENCY EXAMINATIONS

Letter of Petition

The student requesting a trade competency examination submits a petition for the examination stating his name, address, telephone number, student identification number, the number of credit hours he currently has at Wayne State University, his major, and the length of his work experience. This petition is approved by his adviser.

It is proposed that with the submission of future petitions the candidate pay a fee of $10 to cover administrative costs of the competency examination. This fee would be non-refundable.

Report of Work Experience and Collection of Test Fees

Upon receipt of the letter of petition, a second form, the Report of Work Experience, is mailed to the student where he lists each individual work experience with the length of employment, job classification, address of employer, compensation, and similar items. The applicant has this report of work experience notarized.

At the same that the report of work experience is submitted, the student also deposits the test fee of $75.

Rejection of Those with Inadequate Experience

The test administrator at this point reviews the report of work experience and rejects those with inadequate experience.

Preparation and Revision of Tests

During the same period, the test administrator reviews the competency examinations and coordinates the preparation of new tests and revision of existing tests.

Selection of Test Site

As soon as some pattern of requests for examination develops, identifying the different skills or trades that are to be tested, the administrator enlists the support of specialists in educational institutions to coordinate the date and location.

Validation of Tests

After the test has been prepared or a revision has been made to the test, it is submitted to an advisory committee for validation.

Notification of Test Site

A letter of notification is sent to the students, two weeks prior to the test day, as to the test site, time, etc.

Administration of the Theory Examination

The competency examinations are divided into two parts: a theory or written and a performance or application. The theory examinations are generally objective and approximately 90% of them were offered at Wayne State University. Those that required interpretation of directions were offered in the community colleges under the directions of specialists in the particular fields.

Administration of Performance Examination

The performance examinations were offered at some 15 different sites; 13 of these were away from the campus of Wayne State University. The performance examinations were administered by specialists in the particular skill or trade.

Evaluation of Examination

The theory (written) examinations as well as the performance examinations were corrected and evaluated by the specialists in the skill or trade at the testing institutions.

Student Pass Notification

The students who achieved a satisfactory level of performance on the examinations are sent a letter notifying them that upon the payment of a fee of $5 per credit hour, up to 45 quarter credit hours would be placed on their transcripts. These credit hours would be graded at a "B" with no credit toward their honor point average.

Student Failure Notification

Students who did not fulfill all of the requirements in the theory and performance examinations are notified of the areas of their weaknesses. They are given the opportunity to take remedial courses which do not apply toward degree credit at Wayne State University. These courses are generally taken at community colleges or in adult evening school programs. Upon completion of the remedial courses, the student may apply for the full 45 hours of credit.

The student, upon receipt of his failure notification, has the following alternatives for further evaluation:

1. He may consult with the test coordinator and administrator.
2. Failing satisfactory completion in this, he may consult with the curriculum area coordinator.
3. Failing in satisfaction with this, he may request a review by a panel composed of the specialists who procured the examination, the test coordinator, and the curriculum area administrator.

Collection of Fees for Credit and Recording Credits on Student Transcripts

The procedures established by the University for entering credits by examination onto the student's transcript are followed.

TRADE COMPETENCY EXAMINATIONS

SPRING 1971

VAE DESIGNATOR	EXAMINATION TITLE	STUDENTS TESTED	WRITTEN EXAMINATION STAFF & SITE	PERFORMANCE EXAMINATION STAFF & SITE
VAE 1160	Aircraft & Engine Mechanic	1	Aero Mechanics H. S.	Aero Mechanics H. S.
VAE 1164	Automobile Mechanic	5	Wayne State	Henry Ford C. C.
VAE 1168	Die Design	3	Macomb C. C. C.	Macomb C. C. C.
VAE 2163	Electronics Mechanic	9	Wayne State	Macomb C. C. C.
VAE 2164	Modelmaker	1	Wayne State	Wayne State
VAE 3163	Tool Designer	9	Macomb C. C. C.	Macomb C. C. C.
VAE 3165	Welder	1	Wayne State	Schoolcraft C. C.
	MINOR REVISION			
VAE 1161	Auto-Body Designer	6	Macomb C. C. C.	Macomb C. C. C.
VAE 2166	Printer	4	Macomb C. C. C.	Macomb C. C. C.
	MAJOR REVISION			
VAE 2160	Diemaker	8	Wayne State	Macomb C. C. C. Schoolcraft C. C.
VAE 3164	Toolmaker	4	Wayne State	Macomb C. C. C. Schoolcraft C. C.
	NEW TESTS			
VAE 4160	Commercial Foods	2	Wayne State	Wayne State
VAE 4160	Hydraulics	4	Wayne State	Henry Ford C. C.

TESTS BEING PREPARED

VAE 2165	Pipefitter	Wayne State
VAE 4160	Tailoring	Dow School Detroit

TESTS TO BE PREPARED

VAE 1163	Auto Body Repair
VAE 1165	Cabinetmaker
VAE 1166	Carpenter
VAE 2161	Electrician
VAE 2168	Refrigeration Mechanic
VAE 3160	Sheetmetal Worker
VAE 3161	Television Service & Repairman

PHASE III

MISSION:

PROMOTE AND CONDUCT RESEARCH ESSENTIAL TO THE IMPROVEMENT OF VOCATIONAL AND APPLIED ARTS PROGRAMS

RESPONSE: PROFESSIONAL DEVELOPMENT STAFF

Throughout the past year members of the Industrial Education staff were called upon to participate in or provide leadership for a number of meetings, conferences, and seminars.

Dr. Willard M. Bateson represented Industrial Education at the Fourth Annual National Vocational-Technical Teacher Education Seminar in St. Louis, Missouri, November 1-4, 1970. Dr. Bateson participated in presentation and discussion sessions of the project identified as "Model Curricula for Vocational and Technical Teacher Education".

Mr. William Hulle represented WSU at the Michigan Council of Industrial Arts Teacher Educators Conference, October 3 & 4, 1970 at Northern Michigan University, Marquette, Michigan. Conferences and discussions centered around the possibility that the emphasis of Industrial Education should be transferred from manufacturing occupations to service occupations to reflect changing employment patterns.

Drs. Bateson and Silvius and Messrs. Baysinger and Cerny participated in the 43rd Annual Convention of the Michigan Industrial Education Society, held in Lansing, Michigan. Each was called upon to man the Michigan Council on Industrial Arts Teacher Education booth. Here information representative of industrial education programs in the state teacher training institutions was disseminated. All participants were encouraged with the interest expressed on the part of numerous young people with that of the teaching profession.

Dr. Silvius and Mr. Hulle represented the Industrial Education staff at the American Vocational Association convention in New Orleans, Louisiana, December 4-9, 1970. Specific proceedings of interest to the participants were those dealing with Adult Education; Post Secondary Education, Teacher Education, Industrial Arts Education, Technical Education and Trade and Industry Education.

APPENDIX

Exhibit A

Submitted by: G. Harold Silvius
Department: Industrial Education
Institution: Wayne State University
Address: Detroit, Michigan
Telephone: 577-1780 (81)

A PROPOSAL FOR INDUSTRIAL TEACHER EDUCATION TO BE FUNDED FROM STATE VOCATIONAL TEACHER EDUCATION FUNDS DURING THE 1970-71 FISCAL YEAR

The three phases of the Proposal for Industrial Education for the 1970-71 fiscal year are:

I. Conduct a study concerned with "The Status and Projection of the Industrial Education Program at Wayne State University."

The purpose of this proposed study is to make an assessment and evaluation of the prevailing Industrial Education Program at Wayne State University so that these data may be used as the basis for the projection and further development of the offerings in Industrial Education at WSU-during the first half of the seventh deeade of this century.

While it is anticipated that the specific objectives of this study may be altered and refined, as the details of this project are being formulated, these specific objectives have been identified:

1. To formulate a statement of the prevailing philosophy that should underlie the total offering in Industrial Education at WSU.

2. To identify and clarify the prevailing goals and offerings for each of the several instructional sequences in industrial education at the undergraduate, masters, specialist, and doctoral levels, and then consider changes needed in these goals and offerings.

3. To review prevailing descriptions and schedules for all courses in Industrial Education and determine if any of these need to be dropped, changed, or added to - to better meet service area needs.

4. To assess the adequacy of the prevailing full- and part-time staff, and then recommend guidelines for the projection of staff that will be needed for Industrial Education offerings, research, and development, over a five-year period.

5. To review the adequacy of physical facilities being projected for the departmental offerings, research, and leadership, in the plans for the addition to the College of Education Building with the goal of determining if these plans for the projected program in Industrial Education at WSU are adequate.

II. The accelerated development and refinement of:

1. Curriculum materials for industrial teacher education including (a) syllabi for WSU IED courses, (b) instruction in the form of audio or videotape for recordings for the WSU Learning Resource Center (to extend individual development in industrial teacher education), and (c) course examination or other evaluation instruments.

2. Trade competency examinations (during the 1969-70 academic year, 40 individuals in the Trade & Technical Option were scheduled for trade competency examinations).

III. Professional Development of staff, including one out-of-state trip for each key staff member to attend and participate in meetings, conventions, seminars, institutes focused on evolving developments in industrial-technical education-especially as such sessions relate to vocational teacher education.

Budget

1. Graduate Assistant II to serve as Associate Director of the Status and Projection Study	$4,500.00
2. Half-time services of an additional departmental secretary	2,700.00
3. Staff Travel to professional meetings	937.00
(⅓ of 32, 149 for 1970-71 fiscal year)	$8,137.00

It should be stressed that the WSU contribution to the proposed study and the accelerated development of curriculum materials will surpass several times the monetary support being requested from State funds for vocational teacher education. This WSU contribution will be in the form of service from the professional and on-going clerical staff, costs of duplication (syllibi, instruments, course examinations, competency examinations, and final reports), communication costs (postage and telephone), travel, out-of-pocket expenses of advisory committees assisting with the Status and Projection Study.

It would be just impossible to undertake the refinement and further development of the needed curriculum materials to support the rapidly expanding program in industrial teacher education at WSU without the additional secretarial services requested in this proposal. (Last year 395 different individuals studied in the Department of Industrial Education.) It is anticipated also that a small part of the requested additional secretarial service may be allocated to the clerical work that will be needed to support the efforts of the study on "The Status and Projection of the Industrial Education Program at WSU."

G. Harold Silvius

Exhibit B

WAYNE STATE UNIVERSITY
Vocational & Applied Arts Education

April 21, 1971

Mr. Edwin St. John
Acting Deputy Director
Vocational Education Services
Department of Education
Box 928
Lansing, Michigan 48904

Dear Mr. St. John:

Since the inception and subsequent approval of Phase One of the 1970-71 Industrial Teacher Education Proposal as a "The Status and Projection Study of Industrial Education at Wayne State University" (attached as Exhibit A), there have been many internal and external forces that have changed the need for Phase One of our orginal proposal.

As you know, a new organizational unit at WSU for Vocational and Applied Arts Education was officially announced on January 19, 1971, that brought together the former Departments of Industrial Education, Business Education, and Family Life Education as integral parts of the new organizational unit. Hence, several of the proposed objectives for Phase One of the orignal proposal are no longer appropriate. We, therefore, request official approval from the Michigan State Department of Education to change the purpose of Phase One of our study to "An Implementation of Selected Missions for the Vocational and Applied Arts Education Program at Wayne State University". Our efforts will then be directed to provide:

A. Clarification of goals for divisional offerings:

   1. Development and coordination of behavioral objectives for professional courses at the Division level.

   2. Development and testing of a plan for identifying behavioral objectives for technical content courses in industrial education.

Dr. Edwin St. John

B. Assistance in the establishment of Divisional policies and procedures for:

1. Admission policies and practices.

2. Procedures for counseling and developing plans of work.

3. Policies and procedures for field experiences.

4. Priorities and load assignments.

C. A model for an undergraduate vocational teacher education program for students interested in attending a community college for two years before transferring to WSU to prepare as industrial arts teachers.

We, of course, would like to let Phase II and Phase III stand as they were outlined in the original proposal and described on pages 2 and 3 of Exhibit A.

We respectfully request that item #3 of the budget for "Staff Travel to Professional Meetings" be increased by $300.00 (from $937.00 to $1,237.00). This would increase the allocation for Industrial Education to $8,437.00 and the total for the 1970-71 WSU grant for vocational-teacher education to $32,616.00. This additional $300.00 is needed to cover the cost of Industrial Education staff travel and involvement in the Haven Hill Conference held on March 21 through March 24, 1971. This working Conference was essential to undertake the fulfillment of the tasks identified under "A" and "B", of page one, of this letter.

We hope that a decision regarding these proposed changes may be forthcoming in the very near future since we now have such limited time between now and June 30 to complete the work and present the report to your office.

Sincerely,

G. Harold Silvius
Director of the Study

Approved by

Fred S. Cook, Director
Vocational and Applied Arts Education

GHS/mrt
cc: J. Kenneth Cerny, Associate Director of Study
Dr. Willard M. Bateson, Curriculum Coordinator for Industrial Education
Dean John W. Childs

Exhibit C

STATE OF MICHIGAN

DEPARTMENT OF EDUCATION

DIVISION OF VOCATIONAL EDUCATION

Box 928, Lansing, Michigan 48904

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April 27, 1971

Dr. G. Harold Silvius
Director of the Study
Industrial Education
Wayne State University
Detroit, Michigan 48202

Dear Dr. Silvius:

This letter is an approval of the changes you have listed in your request for amending Phase One of the study originally approved for using Teacher Education Funds for 1970-71.

This is also approval of your request for an increase in item number 3 of the budget, Staff Travel to Professional Meetings, to $1,237. This increases the allocation for Industrial Education study to $8,437 for 1970-71.

Sincerely,

Edwin St. John

Edwin St. John
Acting Deputy Director
of Vocational Education

ESJ:sks

cc: Dr. Fred S. Cook